Nilo-Saharan

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Preface

The Nilo-Saharan language phylum, as proposed by Greenberg in 1963, was the most novel hypothesis in this genetic classification of the languages of Africa. In his classification, Nilo-Saharan grew out of Eastern Sudanic (Greenberg 1949-50), which was later enlarged to Macrosudanic (1954). At present, scholarly opinion appears to be divided: some believe that too many language families have been grouped together on too little evidence, whereas others propose genetic links between Nilo-Saharan and the largest African language phylum, Niger-Kordofanian.

One of the problems is the sparsity of linguistic research on Nilo-Saharan. This is mainly due to geographical and historical factors. In Africa, linguistic studies developed in the wake of colonial and missionary activities, but these have not easily reached the Nilo-Saharan speaking peoples, who live far from the African coastlines, and, for the greater part, within the Islamic sphere of influence.

Nevertheless, some important work in Nilo-Saharan has been done recently and more is underway. We felt that the time had come to stimulate contact and exchange between all those engaged in this field, often working in relative isolation. The Nilo-Sahelian Newsletter, of which six issues were published at Carbondale between 1977 and 1979, served to establish a basic network of interested scholars. When it was decided that the 1980 African Languages Colloquium at Leiden would be devoted to Nilo-Saharan linguistics, these scholars were ready to take advantage of this opportunity.

The first Nilo-Saharan Linguistics Colloquium attracted a good number of leaders in the field and an equally important contingent of younger scholars and students entering the field. We were deeply sorrowful that Professor A. N. ("Archie") Tucker, who was to be our guest of honour and keynote speaker, was not able to be amongst us. His outstanding contribution to African linguistics in general, and to Nilo-Saharan in particular, was commemorated in a moving opening address by Miss M.A. Bryan. On behalf of the conference participants, we dedicate these proceedings to the memory of A.N. Tucker.

The present volume contains all contributions received in time for publication, that is, almost all the papers presented at the colloquium. Not unexpectedly, the large number of papers on the complex Nilotic subfamily points to its status as "the Bantu of Nilo-Saharan". It is the best-known subfamily and the one receiving the most intensive research effort. The colloquium has served to broaden the Niloticists' horizon to the Eastern Sudanic Family and beyond, which makes Nilotic phenomena more meaningful, and in turn has directed the attention of non-Niloticists to the richness of the Nilotic subfamily. We have hopes for further cross-fertilization in the future and growth in both the Nilotic and para-Nilotic areas. Preparations are in progress to organize another colloquium on Nilo-Saharan linguistics in 1983.

We express our gratitude to the Faculty of Letters of Leiden University for sponsoring the Colloquium as well as the publication of these proceedings. We also wish to thank staff and students of the Department of African linguistics for their efforts in helping to make the Colloquium a success.

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Margaret Bryan

Professor A.N. Tucker, 1904-1980

Archibald Norman Tucker ("Archie" to his innumerable friends) was born in South Africa, and took his M.A. degree at the University of Cape Town. He was interested in phonetics from his student days: an essay, dated 1925, has survived among his papers, entitled "Phonetics and Language Teaching in South Africa". For this essay he received an A-grade, with the comment from his supervisor: "I give you this grade in spite of the fact that I disagree with your argument at each point where I have placed a comment in the margin. Your essay is unusually suggestive and for some reason or other it makes me lean more toward the use of phonetic script in teaching the mother tongue in lower standards, though that is precisely the procedure you argue against." This interest in phonetics, orthography, spelling reforms, toponymy and onomastics was to last him throughout his life.

By the time he came to England in 1931 he had already done research in several of the South African Bantu languages, and had paid the first of many visits to the Southern Sudan as Linguistic Expert, to advise on the spelling of non-Arabic languages. In London he studied under Professor Alice Werner at the School of Oriental Studies (as it then was) and Professor Daniel Jones at University College, where he gained his Ph.D. in Phonetics; he also spent a short time in Hamburg under Meinhof. In 1932 he was appointed as lecturer in the African Language section of the Department of Phonetics at S.O.S., and subsequently in the Department of Languages and Cultures of Africa (formed in 1933). His D.Litt. degree was awarded for *The Eastern Sudanic Languages I* (1940), and he became Professor of East African Languages in 1951. He retired in 1971.

During his 39 years on the Staff of S.O.A.S. a number of students passed through his hands; many of them were later to become experts in various languages. But it was for his research, and the publications resulting therefrom, that he will be chiefly remembered. A succession of African assistants worked with him, many of whom remained his lifelong friends, and he visited Africa frequently, sometimes on study leave from S.O.A.S., sometimes under the auspices of the International African Institute.

He had been connected with the IAI for many years, and was a member of its Executive Committee, and also of its Linguistic Advisory Committee. When in the

1940's the IAI embarked upon the Handbook of African Languages project he was naturally involved. The original idea had been of a practical, rather than scholarly, work of reference, providing useful information to anyone going out to Africa as to what was known about the linguistic situation in his particular area, e.g. what language was spoken, by how many people; whether grammars and/or dictionaries existed; to what other languages it was related. So, indeed, the work was begun, but as the many gaps in our knowledge at the time were revealed, Archie saw these gaps as a challenge, and proceeded to fill them as far as possible. In the end, the "brief notes" on language relationships which had been envisaged, became, in the Tucker-Bryan section of the Handbook *(The Non-Bantu Languages of North-Eastern Africa)* a supplementary volume of over 600 pages, which took us in all over 20 years to write *(Linguistic Analyses*, 1966).

By this time, Archie's main interest had become the classification of languages. He was convinced that the value of vocabulary comparisons - which should always be based on demonstrable sound-change laws - would be greatly enhanced if there could also be shown to be a morphological-cum-typological relationship. Between the publication of the *Handbook* volume (1956) and that of *Linguistic Analyses* we had already changed our minds on several points, e.g. the avoidance of the term "Hamitic", both in "Hamito-Semitic" (Greenberg's Afroasiatic, our Erythraic) and in "Nilo-Hamitic", which we called "Paranilotic"; later he not infrequently modified our previous statements.

Our partnership in all the Handbook work was a rare and very precious thing: his the capacity for acquiring material, from African informants in London, and in the field; mine the ability to arrange and organise the material he had collected, while he went on to something else. It was a rule in the writing of *Linguistic Analyses* that "neither author shall write any portion of this book which is not understood by the other author, thus ensuring that there are at least two people who understand the book".

Archie was a convinced pacifist, a founder-member of the Peace Pledge Union, and also supported the Campaign for Nuclear Disarmament, and Amnesty International. He was bitterly opposed to the Apartheid of South Africa and to the suppression of freedom of speech and opinion in the USSR. Economical to the point of stinginess in his own life, he was generous to others, financially aiding many Africans with whom he worked in London, and their families.

After his retirement he continued to write articles for various journals, and to attend conferences, at several of which he read a paper. He had, indeed, begun to prepare a paper for the Colloquium at Leiden at the time of his death.

Part one

Nilotic: Language and History

Franz Rottland

The Segmental Morphology of Proto-Southern Nilotic

1. INTRODUCTION

The term "Southern Nilotic" is used here within the framework of Köhler's (1955) and Greenberg's (1963) classifications. It thus refers to one of the three major branches of Nilotic.

As for the internal classification of Southern Nilotic we can today distinguish three branches, viz. Kalenjin, Omotik, and Datooga. There is good evidence to assume that the latter two are genetically more closely related and that the first split in proto-Southern Nilotic led to the formation of proto-Kalenjin and proto-Omotik-Datooga (Rottland 1977). It would therefore seem logical to reconstruct proto-Southern Nilotic via the other two proto-languages. However, the documentation of Omotik has so far too many shortcomings for a grammatical reconstruction of proto-Omotik-Datooga. In addition, Omotik shows clear signs of having been influenced by Kalenjin languages. The reconstructions for proto-Southern Nilotic presented below have therefore been based on the comparison of three units ("languages"), viz. proto-Kalenjin, Omotik and Common Datooga (a synchronic generalization based upon the comparison of six dialects). A reconstructed form is only suggested if it has at least reflexes in proto-Kalenjin and in Common Datooga.

Justification and evidence for proto-Kalenjin reconstructions and for Common Datooga forms will not be given here. Such evidence is contained in Rottland (forthcoming), on which this paper is based. All reconstructions, synchronic data, and most of the arguments have been taken from there. Since phonology is not discussed here it should be understood that sound correspondences are regular unless stated otherwise.

The term "segmental morphology" used in the title indicates a serious limitation of this paper. Tone must have played an important part in the grammar of proto-Southern Nilotic since all Kalenjin languages as well as Datooga show that, for instance, distinctions of case and of verbal aspect are essentially marked by tone. It has not yet been possible to reconstruct (grammatical or lexical) tone patterns for proto-Southern Nilotic.

The following abbreviations will be used: PSN = proto-Southern Nilotic, PK = proto-Kalenjin, POD = proto-Omotik-Datooga, Om = Omotik, CD = Common Datooga, SN = Southern Nilotic, Kal = Kalenjin, Dat = Datooga, the latter two always being followed by the name of a language or dialect. As for reconstructed forms, if the symbol for vowel length is given in parentheses it means that the reconstruction is uncertain in regard to vowel length.

2. MORPHOLOGY OF THE NOUN

Order of Morphemes

Basically, the following sequence of "slots" can be assumed for PSN:

(1) prefix (derivational, "gender")
(2) stem
(3) derivational suffix (singulative)
(4) primary (number) suffix
(5) secondary (definite) suffix
(6) possessive
(7) demonstrative

This assumption is based upon the uniformity of sequence structures all over SN. There is, however, no evidence for a sequence 3-4 in CD, since in CD derivational suffix and primary suffix never occur in the same word. As will be pointed out below, the primary suffixes are a doubtful category anyway. In all SN languages possessive and demonstrative do not normally occur within the same word.

The following are examples for maximal morpheme sequences from present-day languages.

Kal (Kipsikiis): /ki:rw:ɜki:nte:ŋu:ŋ/ 'your elder'

kɪ - rwa:c - i:n - ta - ɪt - ŋu:ŋ
1 2 3 4 5 6

(deverbative cl. 2 - verb 'to judge' - agentive - singular - singular definite - possessive)

Dat (Rutigenga): /gihéwdeydi:rɑ/ 'that breathing'

gi - hɑwd - ey - dɑ - i:dɑ
1 2 3 5 7

(deverbative cl. 2 - verb 'to breathe' - abstract noun suffix - singular definite - demonstrative)

Reconstructions of morphemes will be presented in the order of their slots. The reconstruction of stems will not be discussed.

2.1 PREFIX

The only clear reconstruction of a nominal prefix is PSN *kɪ(:) based upon PK *kɪ:, Om ki- and CD gi-. In present-day languages a reflex of this prefix obligatorily occurs when a noun is derived from a verb of morphological class 2 (see below). In other words, the derivational prefix always occurs together with a derivational suffix and it does not seem to have a function of its own. (Examples are given above.)

Although SN languages are not gender languages, all have sex denoting prefixes which are, for instance, used with personal names. For PSN a masculine prefix *kɪ may be recosntructed on the evidence of PK *kɪp and CD gi-. In that case, however, PK *kɪp would have to be understood as being a contraction of *kɪ and the genitival morpheme *ap. There is no proof so far of the correctness of such an interpretation.

PK has a feminine prefix *cɛ:p which can be related to *tɪɛp 'girl', while Om and CD have a prefix u- which equally can be related to POD *u: 'girl'. Thus, a feminine prefix might have arisen only after the first split of PSN, whereby PK and POD applied identical processes with different lexemes.

Examples:

Kal (Keiyo)	/kɪprɔ́:p/	'born during rainy season' (male)
	/cɛ:rɔ́:p/	'born during rainy season' (female)
	(-rɔ:p- 'rain')	
Dat (Rutigenga)	/gísɑ:ta/	'born during brewing of beer' (male)
	/úsɑ:ta/	'born during brewing of beer' (female)
	(su:d-da 'ceremonial beer')	

2.2 DERIVATIONAL SUFFIX

PSN has a singulative suffix *yɜ:n which has regular reflexes in PK *yɜ:n, Om -yɑ:n- and CD -jɛ:n-. Examples:

Kal (Keiyo)	/nɜtɜtyɜ́:n/	'a bit of mud'
Dat (Gisamjanga)	/dɑbɛ:gjɛ́:ndɑ/	'a tear'

The PK agentive suffix *i:n has an equivalent in Om, but there is no supporting evidence from CD. Furthermore, PK has a whole range of derivational suffixes which are absent in the other two branches.

2.3 PRIMARY (NUMBER) SUFFIX

For the analysis of Kalenjin nouns Tucker and Bryan (1962) have introduced the terms "primary form" (form without the secondary suffix), "secondary form" as well as "number suffix". The number suffixes are called thus because each of them occurs with a given noun stem only in the plural forms or in the singular forms. It is not clear, however, that these suffixes have a number function, and not all stems have a number suffix. The following example from Kal (Kipsikiis) shows the occurrence of a suffix -wɜ- in plural forms with the stem -ŋɔt- 'spear'.

	primary form	*secondary form*	
singular	/ŋɔ́t/	/ŋɔtɪ́t/	ŋɔt-ɪt
plural	/ŋótwɜ́/	/ŋótwê:k/	ŋɔt-wɜ-ɪk

In Kal the combination of a given number suffix with a given stem (hence the "noun class" of a stem) may vary from language to language. The attribution of number suffixes to stems in PK therefore poses certain problems. PK, Om and CD all have a large variety of number suffixes and on purely formal grounds some items may be reconstructed for PSN. So far I have not reconstructed any number suffixes since as a functional system the whole complex is still unclear.

2.4 SECONDARY SUFFIX

Forms:

singular	PSN *ɪta	PK *ɪta	Om itɑ	CD dɑ
plural	PSN *ɪka	PK *ɪka	Om ikɑ	CD gɑ

In present-day Kalenjin these suffixes never have both vowel. Instead each language has VC or CV as variants according to phonological rules. C. Creider (n.d.), to whom I owe the initial idea for this analysis of secondary suffixes, considers VC to be the (synchronically) uncerlying shape for Kal; he arrives at CV through deletion and epenthesis. The evidence from Om and CD, however, suggests VCV as the historically underlying shape (for PK and PSN). Evidence from CD may suggest that here PSN had already variation involving vowel deletion and that the rules were maintained in PK and simplified in POD.

Function:

There is evidence that in PSN the secondary suffixes were in some way linked with the notion of definiteness. In Kal the functional distinction betwenn primary noun forms and secondary noun forms is either "unmarked : definite" (e.g. Päkot) or "indefinite : unmarked" (e.g. Nandi). In CD primary forms do not occur but the (basically unmarked) secondary forms contrast with forms containing a "generalizing" suffix.

Dat (Rutigenga)	/bé:ʃdɑ/	'(the) elephant'
	/bέ:ʃi/	'any elephant, anything elephant-like'

2.5 POSSESSIVE

In SN possessive suffixes are marked for the number of the object possessed as well as for number and person of the possessor. Thus twelve different suffixes have to be distinguished.

possession	*possessor*		*PSN*	*PK*	*CD*	*Om*
singular	singular	1	*ɲʊ(:)	*ɲʊ:	ɲu	
		2	*ŋu(:)	*ŋu:	ŋU	ŋu
		3	*ɲi(:)	*ɲi:	ɲI	
	plural	1	*ɲɜ(:)	*ɲɜ:	ɲɑ	ɲɑ:n
		2	*ŋwɜ(:)	*ŋwɜ:	ŋwɑ	ŋwɑŋ
		3	*ɲwa(:)	*ɲwa:	nɑwɑ	
plural	singular	1	*cʊ(:)	*cʊ:	su	
		2	*ku(:)	*ku:	gU	
		3	*cɪ(:)	*cɪ:	sjI	
	plural	1	*cɜ(:)	*cɜ:	sA	
		2	*kwɜ(:)	*kwɜ:		
		3	*cwa:	*cwa:		

(Om is not sufficiently documented.)

The final nasals occurring in Om have correspondences in many Kal languages. They can be explained by assuming that PK and perhaps PSN had reduplicated forms of the suffixes. The present forms are the result of vowel loss and consonant changes, e.g. *ɲɜ:-ɲɜ: → *ɲɜ: → ɲɑ:n, *ŋwɜ:-ŋwɜ: → ŋwɑ:ŋ.

The reconstruction of some vowel qualities presents a more serious problem. In the CD forms some vowels have been indicated by a capital letter. This does not mark any phonemic distinctiveness of a vowel (e.g., i and ɪ are phonetically and phonemically identical); suffixes with a capital letter indicate that before them noun stems have [-ATR] vowels whereas with the other suffixes they have [+ATR] vowels. Compare the following forms:

Dat (Gisamjanga)	/beːʃdɛːɲu/	bɛːʃ-dɑ-ɲu	'my elephant'
	/bɛ́ːʃdɑŋu/	bɛːʃ-dɑ-ŋU	'your elephant'

It should be noted that although the stem has been given an underlying [-ATR] quality here, stem vowels in Datooga do not have a basic ATR quality, but all stem vowels are [-ATR] in some (morphological) contexts and [+ATR] in others. In any case, we may assume that the vowels marked by capital letters here have some underlying affinity to the feature [-ATR]. In just these cases the corresponding PK form always has a [+ATR] vowel. This is contradictory evidence and I have projected the PK forms into PSN simply because PK on the whole has better retained the PSN features. There is no explanation, however, for an apparent "reversal" in CD.

2.6 DEMONSTRATIVE

Both PK and CD have several categories of demonstratives indicating different degrees of proximity to the speaker. As far as the morphemes for these categories are concerned, only the near demonstrative can be reconstructed.

	PSN	*PK*	*CD*	*Om*
singular	*ni	*ni	(n)i	(n)i
plural	*cu	*cu	su	cu

The symbol (n) indicates that in synchronic analysis the nasal could be a feature of noun stems before -i or part of the suffix.

3. MORPHOLOGY OF THE VERB

Order of Morphemes

Leaving aside any tense or aspect morphemes the following sequence can be established for PSN.

(1) negative
(2) subject
(3) root

(4) derivational extension
(5) object

The sequence 2-3-4 is immediate, whereas 5 can only be said to stan
finally and 1 to precede 2. The object position includes the refle
pheme. Examples:

Kal (Markweta) /kɜmɜkenɜ́mɜn/ 'I was not taken'

ka - ma - kɛ - nam - ɜn
1 2 3 5

past - negative - impers. subj. - 'take' - object

Dat (Rutigenga) /imɑydɛ́huːnɑyigɛw/ 'if I did not wash myse

i - m - ɑj - dɑ - huːn - ɑy - gɛw
1 2 3 4 5

conditional - negative - future - subject - 'wash' - habitua
future - reflexive

The possibility of assigning slots and reconstructing morphemes f
and aspect will be discussed first. Other reconstructions will be pre
the order of sequence.

3.1 TENSE AND ASPECT

All SN languages have tense/aspect morphemes which in the order o
occur between positions 4 and 5. It has not been possible to reconstr
morpheme for this position.

There are also tense/aspect morphemes occurring before the subjec
nd for this position a PSN morpheme *k may be reconstructed. Its pos
elationship to the negative morpheme is unclear. For the reconstruct
e following evidence can be given. PK had three past tense morpheme
a 'today', *kɔ 'yesterday', and *kɪ 'far past'. Alternatively, we ca
fy a past tense morpheme *k with vowel morphemes for further specific
has a present tense morpheme -kɑ- which is replaced by -mɑ- in the
CD the replacement is general, i.e., all affirmative verb forms con
ment -G- (/g/ or /q/) which is replaced by -m- in the corresponding
ms. Thus /gɑydɛ́huːni/ 'I shall wash' corresponds to /mɑydɛ́huːni/ 'I
wash'. We can at least speculate that PK *k, Om -kɑ-, and CD -G-
ense or aspect morpheme *k in PSN. It remains open whether this mo
eded the negative morpheme (as in PK) or whether it was in alterna

*ma (which itself then had tense/aspect functions). If not earlier, then replacement began in POD for one tense and was generalized in CD.

3.2 NEGATIVE

As indicated in the preceding section, the negative morpheme has been identified as -m- for CD, although a synchronic analysis leading to -mɑ- is possible. Om has -m(ɑ)- and PK has *ma so that PSN *ma seems to be the most plausible reconstruction.

3.3 SUBJECT

Reconstruction and reflexes of subject prefixes are shown in the following table

		PSN	*PK*	*Om*	*CD*
singular	1	*a	*a	ɑ	ɑ/dɑ
	2	*ɪ	*ɪ	i	i
plural	1	*kɪ/kɛ	*kɪ	e	ɛ/si
	2	*ɔ	*ɔ		ɔ
sg./pl.	3	*kɔ	*kɔ	kɑ/kɔ	qɑ/qɔ

The variant -dɑ- for 1st person sing. in CD is restricted in its occurrence and can be considered an innovation. In 1st person pl. the loss of *k in Om and in CD is connected with the alternation *k/*m shown above and may have originated in POD. The reconstruction of two PSN morphemes for 1st person pl. is primarily based upon the phonological evidence, but it is possible that one of the forms reconstructed was in fact an impersonal subject prefix, since many SN languages have such a prefix, shich is identical in form to the 1st person, where Om and CD have each two reflexes. The explanation for this fact is that POD had a change *ɔ → *a which only applied to short vowels. The variants -kɔ- and -qɔ-, which only occur with class 2 verbs (s. below), are derived from *-kɔ-i (of class 2) which became *kɔ: and was shortened at a time when the shift from *ɔ to *a no longer applied. In Kal the reflexes of *kɔ occur only in certain grammatical environments and alternate with zero elsewhere. It is not possible to say whether this distribution is older than PK.

3.4 ROOT

Lexical reconstructions are not considered here, but it has to be mentioned that all SN languages have two morphological classes of roots and that this distribution can be postulated for PSN. Most probably verbs of class 2 were marked by a pre-root vowel *ɪ which can be clearly reconstructed for PK and which can be inferred for POD from observations of the kind illustrated in the preceding section. The vowel *ɪ may have been a causative morpheme, although a process of forming causatives with ɪ- is nowhere operative in SN. Yet class 2 shows a certain affinity to causative verbs and if a root occurs in both classes it is causative in class 2.

Since the following section deals only with derivational morphemes, it may be mentioned here that both Kal and CD have pairs of roots for which the causative member shows vowel lenghtening; cf. CD **-hɑb-** 'to be well', **-hɑ:b-** 'to cure', -ɲɛrɛs- 'to be angry', -ɲɛrɛ:s- 'to annoy'. In each case lenghtening is paralleled by a shift from class 1 to class 2.

3.5 DERIVATIONAL EXTENSION

All SN languages have a number of derivational suffixes which under grammatically defined conditions occur either in a "short" form or in a "long" form. Thus in Kal languages the short form of the Andative 2 suffix is **-a:t-** whereas the long form is **-a:tɛ:n-**. On phonological grounds the long form can be analysed as the combination of a basic derivational suffix plus a sequence **-ɪn-** for which no function can be defined. Essentially, this is the case for all SN languages. In the following table long forms are only given if they help to make the reconstructions more plausible. Otherwise the basic suffixes are presented.

	PSN	*PK*	*CD*	*Om*
Instrumental	*a	*a	V/ɑ(:)n	e:n
Applicative	*ci	*ci	s/si:n	ci
Essive	*i:syɜ	*i:syɜ	ʃ/ʃe:n	
Andative 1	*ta	*ta	d/dɑ:n	te:n
Ventive 1	*u	*u	u	ne
Andative 2	*a:ta	*a:ta	ɑ:d	
Ventive 2	*ɜ:nu	*ɜ:nu	ɑ:n	
Inceptive	*ɪ(:)t	*ɪt	i:d	

Semantic functions, if they are not obvious, shall only be briefly indicated here: Applicative refers to the beneficiary or the instigator of the action. Essive presents the action as absolute and abstracted from all actual temporal and spatial circumstances. Syntactically, the Essive morpheme obligatorily deletes the object ("pseudo-intransitive"). Andative 1 and Ventive 1 indicate respectively direction away from and towards the speaker. In Andative 2 and Ventive 2 the action involves a movement away or towards the speaker. The Inceptive is used with stative verbs and indicates the transition towards the state indicated. In the literature on Southern and Eastern Nilotic languages, some of the categories have been termed differently, e.g. "Intransitive" for Essive and "Dative" for Applicative (Tucker and Mpaayei 1955).

Examples for Kal can be found in a number of publications (e.g. Toweett 1979). Examples for Dat (Gisamjanga) are listed below.

Instrumental	/mwɑlɑ́jɑnɑ mɑnɑwdɑ/	'he does not cut with a knife'	-ɑn-
Applicative	/gɛ́lɑgsi sɪ́:dɑ/	'I cut for the person'	-s-
Essive	/gɛ́de:gʃi/	'I build'	-ʃ-
Andative 1	/gɛ́jɛ:gdɑ/	'I send (away)'	-d-
Andative 2	/qwɑ́lɑjɑ:dɑ/	'he cuts (while going)'	-ɑ:d-
Ventive 1	/nílɑ̂gu/	'he cut (towards me)'	-u-
Ventive 2	/nilɑ́jɑ:ni/	'he came cutting'	-ɑ:n-
Inceptive	/qɑ́wé:ʃɪ̂:ti/	'I become white'	-i:d-

Some comments on phonological aspects of the reconstructions may be helpful.

Instrumental: the symbol V in CD stands for lenghtening of the preceding vowel. If the long forms have an underlying suffix -ɪn, it is noteworthy that CD shows vowel assimilation (raising) for Essive, but not for Instrumental and Andative 1. (In Kal and Om raising is general.)

Essive: Two Dat dialects have -i:sy-. A shift *sy → ʃ is not regular and may have been influenced by the fact that Maasai has an "intransitive" suffix -ɪʃɔ-.

The suffixes for Andative 2 and Ventive 2 may be analysed as containing a motion suffix *a: followed by Ventive 1 and Andative 1 respectively. Ventive 1 would then have two variants, *u and *nu.

3.6 OBJECT

PSN did not have an object suffix for 3rd person. From present-day evidence we can conclude that a 3rd person object was always implied when a verb form was not marked for object. Reconstructions and reflexes for 1st and 2nd persons are the following:

		PSN	*PK*	*CD*	*Om*
singular	1	*a:n	*ɜ:n/ɜn	ɑ:ni	ɑ:n
	2	*ɪ:n/ɛ:n	*i:i/in	i:ɲi/ɛ:yi	e:n
plural	1	*ɛ:c	*e:c	ɛ:sɑ	ɛ:c
	2	*ɜ:k	*ɜ:k	ɛ:gwɑ	

All the reconstructions are problematic in regard to the ATR quality of the vowels. This applies to PK as well as PSN. In the majority of their grammatical contexts, Kal languages have object suffixes with [+ATR] vowels. These vowels are regularly dominant, i.e., they assimilate all recessive [-ATR] vowels in the word to [+ATR]. However, at least some languages have grammatical contexts in which all object suffixes have basically [-ATR] vowels and are accordingly recessive (Toweett 1979:209). It seems that already in PK the suffixes began to lose their basic ATR qualities in favour of grammatically determined variants. The series with [+ATR] vowels given under PK is probably not more than a list of the statistically more frequent variants. The evidence from CD and from Om points rather to [-ATR] vowels for PSN except for *ɜ:k. (PSN *ɜ: and *ɛ: both have a reflex ɛ: in CD.)

In Kal the Singular suffixes show "subject concord", verbs with 3rd person subject having the short variant of the suffix. This distribution cannot be traced beyond PK.

3.7 REFLEXIVE

The reconstuctions for PSN and for PK show a problematic protophoneme *R which is discussed in Rottland (forthcoming). The reflexes in Kal are -kɛ:x, -kɛ:y, and -kɛ. In all SN languages the reflexive morpheme is opaque in regard to vowel harmony, which might indicate that it was originally a free form.

PSN	*PK*	*CD*	*Om*
*kɛ:R	*kɛ:R	gɛ:w	kɛ:w

4. ADJECTIVES AND PARTICIPLES

In PSN adjectives had a plural suffix *e(:)c and participles (which were in the same syntactic category) had a suffix *a:t. Evidence comes from PK *a:t and from CD -ɑs and -a:d.

5. PRONOUNS

In SN languages, possessive and demonstrative pronouns are formed by adding the relevant suffixes to a pronominal stem. Such stems cannot yet be reconstructed.

The following table presents reconstructions of the personal pronouns. Most reconstructions are doubtful in details. Evidence for 3rd person sing. is not conclusive.

		PSN	*PK*	*CD*	*Om*
singular	1	*an(a)	*ana	ɑni	ɑne
	2	*in(ɜ)	*inɜ	(ɑni)	ine
plural	1	*aca	*aca	ɑsɑ	(ɛcɑ)
	2	*ɔkwa	*ɔkwa	ɑgwɑ	ɔkwɑ
	3	*(i:)ca	*i:ca	sɑ:	

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Chet A. Creider

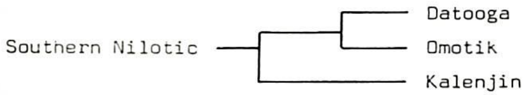
The Tonal System of Proto-Kalenjin

1. INTRODUCTION

The Kalenjin languages are a branch of the Southern Nilotic languages. They are spoken primarily in Western Kenya. Comparative study of the languages was undertaken by Rottland (1978) where reconstructions for much of the grammar and some of the lexicon were proposed. No work was done on tone, however, and the substantive effort of the present work is to add to our knowledge of the proto-Kalenjin language in the area of tone. A second purpose of this paper is to show how the methods of modern dialectology (Parker 1971, Bailey 1973) can be combined with advances in the natural phonology of tone (Hyman and Schuh 1973, Tucker and Creider 1975, Creider 1978) to make possible considerable precision of specification of the details of historical tonal systems.

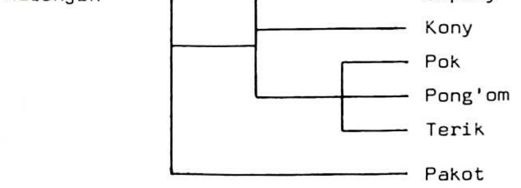
Within Southern Nilotic, the Kalenjin languages are classified as follows (adapted from Rottland 1978):

(1)



Internally the languages are grouped as:

(2)



(See Appendix A for phonetic transcriptions of language names.)

During a year of fieldwork (1979-80) the tonal systems of each of these dialects were studied, and it is on the basis of this comparative information that the reconstruction of the tonal system of the protolanguage is attempted.

Tonal reconstructions will primarily be exemplified for nominal forms. Nouns in the Kalenjin languages occur in two basic forms, termed primary and secondary (see Tucker and Bryan 1964-65). Primary forms consist of a stem plus in most cases a primary (number) suffix.

(3) **la̱:k-wa̱** 'child'
la:k-ó:y 'children' (Kipsikiis)

Secondary forms have an additional suffix -i̱t (sg.)/ -i̱k (pl.). The two suffix types usually fuse (with monophthongization).

(4) **la̱:k + wa̱ + ít → la̱:kwé̱:t**
la̱:k + o:y + í̱k → la:kô:k (Kipsikiis)

In all dialects except Pakot, secondary forms are more usual. They convey a more concrete sense of the noun, although they need not be referential since they can freely occur as predicate nominals. In Pakot the primary form is more usual, and the secondary form is used when the noun is definite.

2. RIFT VALLEY GROUP (KIPSIKIIS-MARKWETA)

2.1 TONAL PROCESSES

These languages have either three (H,L,F) or four (H,L,F,F̱) surface tones. The three-tone languages are Kipsikiis and Markweta. Nandi, Tuken, and Keyo have four tones. All languages have three underlying tonemes (H,L,F).

Downdrift

Downdrift is not found in any dialect.

Final Downglide

Final low tones may glide down in Kipsikiis and Markweta only.

(5) **áy-wa̲** 'axe' (Ki, Ma)
la̱ŋa̲t (Ki), **la̱ka̲t** (Ma) 'evening'

Downstep

No dialect has automatic downstep after a low tone.

(6) **máce ko̱ká̱s** '(he) wants to hear (it)' (Ki)

The low-falling tone in Nandi, Keyo, and Tuken causes a change of register with subsequent lows equivalent in pitch to the extra-low level of the lowfall, and high tones correspondingly lowered.

(7) po̱:lì̱k ꜝsisí:t 'eight clouds' (Na)

In rapid speech, the low-fall may commute to a low tone, but a following low will still be downstepped.

(8) po̱:li̱k ꜝsisí:t 'eight clouds' (Na)

Low Raising

In Nandi, Keyo and Tuken low tones are raised to mid-level after high tones.

(9) áy-wa̍ 'axe' (Na, Ke, Tu)

Mid-low Fall

In Nandi alone a mid (i.e. a raised low) tone after a high and before a low-falling tone is realized as a mid-to-low fall.

(10) cúmpî:ntèt	'European'
kényî:syèk	'years'

Rising Tone

In Nandi and Markweta a high tone on a long vowel following a pause or a low tone (including after a high falling tone) is nearly always heard as a rising tone. This is less frequently heard in Keyo, and is rare in Tuken and Kiksikiis.

(11) la̱:k-wě̱:t 'child' (Na, Ma)

High Fall Raising (HFR)

All dialects show the raising of a falling tone before a following high tone.

(12) sótô:n 'gourds' + sómo̍k 'three' → sótó:n sómo̍k 'three gourds'
tu̱:kà̱ 'cattle' + sómo̍k 'three' → tu̱:ká̱ sómo̍k 'three cattle'
(Na, Ke, Tu)

Fall Commutation Downstep (FCD)

In Markweta alone the commutation of a falling tone before a following high tone results in the downstepping of that high.

(13) sótô:n + sómo̱k → sótó:n ꜝsómo̳k 'three gourds'

High Lowering (HL)

In all dialects except Markweta a high tone is lowered before a following high tone. In Kipsikiis this process is fully operative only with long vowels.

(14) ke:-kú:r 'to call' + pí:k 'people' → ke:-ku:r pí:k (Ki, Na, Tu, Ke)
ke̱:-ká̱s 'to listen to' + pí:k → ke̱:-ka̱s pí:k (Na, Ke, Tu)

High Fall Creation (HFC)

In all dialects the coalescence into a single syllable of two syllables each of which bears a high tone results in a high falling tone on the syllable.

(15) lo̱:ŋ + á̱ + í̱t → lo̱:ŋ + é̱́t → lo̱:ŋ + ê̱:t 'shield'

Floating Tone Addition (FTA)

In all dialects the deletion of a final syllable bearing a high tone leaves a floating tone which attaches to the preceding syllable if this is low.

(16) ŋe̱ce̱r + á̱ → ŋecer + ´ → ŋe̱cé̱r 'chair' (Ki, Na, Tu, Ke)
(Ma has ŋa̱cá̱r.)

High Fall Lowering (HFL)

In Nandi, Keyo and Tuken underlying high falling tones are converted to low falling tones following a low tone or word initially.

(17) mô:s + o → mò:s + o 'baboon' (Na, Ke, Tu)

This rule must be ordered before HFC since high falling tones created by this process are not realized as low falling tones (see (15) above).

Final Fall (FF)

In Nandi and Keyo virtually all final high tones are converted to falling tones. The rule is found in more restricted forms in the other dialects and is discussed below (2.2). FF is ordered before HFL (which it feeds) and FTA (which counterfeeds it).

(18) po̱:l + tá̱ → (FF) po̱:l + tâ̱ → (HFL) po̱:l + tà̱ 'cloud' (Na, Ke)

The following chart (19) summarizes the previous discussion and shows the presence (+), absence (-), and presence under varying conditions (x) of each process in each dialect.

(19)

	Na	*Ke*	*Tu*	*Ki*	*Ma*
Downdrift	-	-	-	-	-
Final Low Downglide	-	-	-	+	+
Auto. Downstep: L	-	-	-	-	-
Auto. Downstep: Ḻ	+	+	+	-	-
Low Raising	+	+	+	-	-
Mid-Low Fall	+	-	-	-	-

	Na	*Ke*	*Tu*	*Ki*	*Ma*
Rising Tone	+	(+)	-	-	+
High Fall Raising	+	+	+	+	+
Fall Comm. Downstep	-	-	-	-	+
High Fall Creation	+	+	+	+	+
Floating Tone Attach.	+	+	+	+	+
High Lowering	+	+	+	×	-
High Fall Lowering	+	+	+	-	-
Final Fall	+	+	×	×	×

2.2 NOMINAL MORPHONEMICS

All dialects show three basic stem types with final low, high, or falling tones (underlying). This three-way distinction is cross-cut by a further distinction between low-toned primary suffixes (termed type "a") and high-toned primary suffixes (termed type "b"). There is very little variation among dialects with the type "a" set (shown in (20)). (The final t is deleted in Tuken and Markweta.)

(20)		*primary*	*secondary*	
	L	**la̱:k-wa̱**	**la̱:k-wé̱(t)**	'child'
		sot (deleted primary suffix)	**sot-é:(t)**	'gourd'
	H	**í̱ntá̱:r-a̱**	**í̱ntá̱:r-é̱:(t)**	'snake'
		áy-wa	**áy-wé:(t)**	'axe'
	F	**rô:t-wa** (Ki, Ma)	**rô:t-wé:t** (Ki)	'knifɛ'
			ró:t-ꜝwe: (Ma)	
		rò:t-wa (Na, Ke, Tu)	**rò:t-wé:(t)** (Na, Ke, Tu)	

Forms such as **áy-wé:t** are underlyingly /**áy** + **wa̱** + **í̱t**/. The low tone on the primary suffix blocks High Lowering. Similarly, forms such as **rô:t-wé:t** are derived from /**rô:t** + **wa̱** + **í̱t**/, and the low-toned primary suffix blocks High Fall Raising. In Markweta, however, the vowel fusion which produces the **-wé:** secondary form precedes Fall Commutation Downstep, and the underlying falling stem tone is raised.

With high-toned primary suffixes there is more inter-dialect variation and it is in addition necessary to distinguish between a northern and a southern dialect of Markweta.

(21)

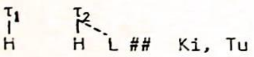
	Na, Ke	*NMa*	*SMA*	*Tu*	*Ki*	
L	po̱:l̀-tà̱	pó̱:l-tá̱	po̱:l-tá̱	po̱:l-tá̱	po̱:l-tá̱	'cloud'
	ló̱:ŋ	ló̱:ŋ-á̱	lo̱:ŋ-á̱	lo̱:ŋ-á̱	ló̱:ŋ	'shield'
	ŋe̱cé̱r	ŋa̱cá̱r	ŋa̱cá̱r	ŋe̱cé̱r	ŋe̱cé̱r	'chair'
H	ce̱:pó̱ló̱l-ô̱	ce̱:pó̱ló̱l-ô̱	ce̱:pó̱ló̱l-ó̱	ce̱:pó̱ló̱l-ó̱	ce̱:pó̱ló̱l-ó̱	'pumpkin'
	kérêp	kérêp	kórôp	kérép	kérép	'basket'
	lé̱kê̱m	lá̱kâ̱m	lá̱kâ̱m	lé̱kê̱m	lé̱kê̱m	'below'
F	è:m	é:m-â	é:m-á	è:m	ê:m	'country'
	é:t-yâ		é:t-yá	yé:t-yá	é:t-yá	'bridge'
	ò̱:r	ô̱:r	ô̱:r	ò̱:r	ô̱:r	'road'

With low-toned stems the primary suffix has a high-tone on the surface in all dialects except Nandi and Keyo where Final Fall applies. If the primary suffix is deleted, Floating Tone Attachment applies raising the (final) stem syllable. The northern dialect of Markweta shows a special process (found also in Pakot) where the high tone of the primary suffix spreads back onto the stem syllable (ló̱:ŋ-á̱) (Backwards High Spreading).

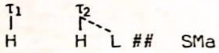
Kipsikiis and Tuken high stems show high tones on primary suffixes and also on obstruent-final stems (when the primary suffix is deleted). Sonorant--final stems, however, show falling tones. Further examples are sá̱pí̱t 'porcupine' (Ki, Tu), ce:pkoykóc (Ki), képên 'cave' (Ki, Tu), rókôr 'drinking straw' (Ki, Tu). The rule of Final Fall operates here in a highly restricted environment (a preceding high tone, and on a syllable ending in a sonorant). A similar conditioning is found in adjectives (á̱nyî̱ny 'tasty'/ká̱ytí̱t 'cold') and short-vowel i-stem verbs (ki:-nîn 'to stretch taut'/ki̱:-ká̱t 'to greet') (Ki) (ki:-nîn is underlyingly ke: + ínín).

The South Markweta dialect is like Kipsikiis and Tuken in that primary suffix tones are not "felled", but both obstruent and sonorant-final stems show final falling tones when the primary suffix is deleted. The northern dialect has falls here and also on primary suffixes. The Final Fall rule evidently shows four stages of generalization.

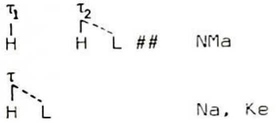
(22)



Condition: τ_2 ends in a [+son] consonant.



Condition: τ_2 ends in a consonant.



Note that the rule of Backwards Tone Spreading found in North Markweta must apply after Final Fall since it would create an environment suitable for the application of the form of the latter rule in that dialect.

3. THE MOUNT ELGON (SABAOT) GROUP

3.1 TONAL PROCESSES

Speakers of Terik have migrated south from the Mt. Elgon area and now live adjacent to the Nandi. The remaining dialects share a common tonal system with only a few differences between dialects. Terik, however, must be treated separately. I noted no tonal differences between Pok and Pong'om and discuss only the former below. There are only two underlying tones found in these dialects, H and L.

Downdrift

Except in Sapiny, both successive highs and successive lows show downdrift. The downdrift is steplike, i.e., pitch does not change within a syllable.

(23) **késé tún** '(he) sees (a) hill' (Pok) (stepwise fall)

Final Low Downglide

Present in all dialects

(24) **na̱ŋa̱̳t** 'yesterday' (Pok)
ké̱:-ka̱̳s 'you saw' (Sapiny)

Automatic Downstep

Found in all dialects

(25) **mecé ko̱ká̱s** '(he) wants to see' (Pok)

High Lowering

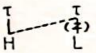
This rule is fully operative only in Pok and Pong'om.

(26) **ke̱:-ká̱s** 'to see' + **cúmpí:ntét** 'European' → **ke̱:-ka̱s cúmpí:ntét** (Pok)
ke̱:-ká̱s + **ró:t-wé:t** 'knife' → **ke̱:ká̱s ró:twé:t** (Kony)
ne:kó:k 'children' + **mú:t** 'five' → **ne:ko:k mú:t** (Pok)

High Spreading

This is a distinctive rule found only with the Mt. Elgon dialects. A low tone following a high tone is raised to high. In some cases, varying with dialect, a high-falling tone results (i.e., the association line with the low tone is not destroyed).

(27)



For Pok:

(28) késé 'he sees' +	sa:	'buffalo'	→	késé sá:
	tun	'hill'		tún
	sət	'gourd'		sə́t
	səté:t	'gourd'		sə́té:t
	pe:t	'day'		pé:t
	ne̱:kwa̱	'child'		nê̱:kwa̱
	te̱:tá̱	'cow'		té̱:tá̱
	so̱ro̱:m	'kidney'		só̱ro̱:m

For Sapiny:

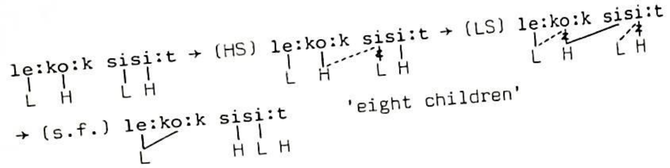
(29) acilé 'I see' +	le̱:kwa̱	'child'	→	acilé lê̱:kwa̱
	le̱:kwe̱:t´	'child'		lé̱:kwe̱:t´
	tul	'hill'		tûl
	sot	'gourd'		sôt
	sote:t´	'gourd'		sóte:t´
	sikirye:t´	'donkey'		síkirye:t´
	so̱ro̱:mye̱t´	'kidney'		só̱ro̱:mye̱t´
	pe:t	'day'		pê:t

Low Spreading

Sapiny, but not Pok, Pong'om, or Kony, has a rule, structurally somewhat parallel to High Spreading, which shifts a final high tone to the right when a low tone precedes (i.e., the low spreads onto the next syllable). If there is a following low tone, the shifted high tone will appear (through the operation of High Spreading). Otherwise it will be lost.

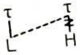
(30) po̱:l + yá̱ → (LS) po̱:l + ya̱´ → po̱:l-ya̱ 'cloud

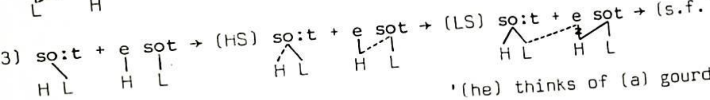
The interaction of High and Low Spreading is interesting.



'eight children'

) Low Spreading





'(he) thinks of (a) gourd

None of the rules which reference falling tones in the Kipsi
group are found here (HFC, HFR, HFL, FF), and there is insuffici
justify postulating an underlying falling tone. Floating tone a
ever, is found (see below 3.2).

3.2 NOMINAL MORPHOPHONEMICS

The chart below (34-35) presents the Sabaot forms for the
classes outlined previously for the Kipsikiis-Markweta group.

(34) group "a" (underlying tone of primary suffix low)

	Kony		*Pok*		*Sapiny*	
L	sot	sot-é:t	sət	sət-é:t	sot	sot
	le̱:k-wa̱	le̱:k-wé̱:t	ne̱:k-wa̱	ne̱:k-wé̱:t	le̱:k-wa̱	le̱
H	tí̱l-yá̱	ti̱l-yé̱:t	tí̱n-yá̱	tí̱n-yé̱:t	tí̱l-yá̱	ti̱
F	ró:t-wa	ró:t-wé:t	ró:t-wa	ró:t-wé:t	ró:t-wa	ró

(35) group "b" (underlying tone of primary suffix high)

L	po̱:l-yá̱	po̱:l-yé̱:t	po̱:n-tá̱	po̱:n-té̱:t	po̱:l-ya̱´	p
	ló̱:ŋ	lo̱:ŋ-é̱:t	nó̱:ŋ	no̱:ŋ-é̱:t	ló̱:ŋ	l
H	kí̱s-yá̱	ki̱s-yé̱:t	kí̱s-yá̱	ki̱s-yé̱:t	kí̱s-yá̱	k
	kerép	kerep-é:t	kerép	kerép-é:t	kerép	
F	ye:t-yá	ye:t-yé:t	yé:t-yá	yé:t-yé:t	ye:t-yá	
	má:	ma:-é:t	má:	má:-é:t	má:	

Dealing first with the group "a" set, for the low-ste
forms are the same as for the Rift Valley group, and the o
here is in Sapiny where Low Spreading moves the high tone
of secondary forms to the right (sot-e:t´). With high-to

of High Spreading results in a surface high tone on the primary suffix. That the tone on the primary suffix is underlyingly low can be seen by comparing demonstrative forms for these nouns with demonstratives for group "b" H nouns (where the primary suffix is underlyingly high). When a demonstrative suffix is added to a primary form, the primary suffix vowel is lengthened. The surface shapes are tí̱l-yâ̱:-ni̳ 'this kindred' (group "a") and ki̱s-yá̱:-ni̳ 'this grinding stone' (Sapiny). In Kony and Sapiny an additional rule is required to lower the stem tone in secondary forms (ti̱l-yé̱:t). This rule must be ordered after Low Spreading in Sapiny since the tone remains high on the fused primary plus secondary suffix syllable.

With nouns that are cognate with falling-tone stem nouns in Kipsikiis-Markweta, a high tone is found on the stem, but the rule of High Spreading does not apply here. These nouns must be marked as exceptions to this rule, for there is insufficient evidence to justify postulating an abstract underlying falling tone.

Group "b" low tone nouns are identical in underlying tonal form with cognate nouns in Kipsikiis-Markweta. Surface shapes are also the same except that in Sapiny Low Spreading applies to /po̱:l + yá̱/ giving po̱:l-ya̱´ 'cloud' (po̱:l-yé̱:t is underlyingly /po̱:l + yá̱ + í̱t/ and Low Spreading cannot apply here because the tone preceding the final high is not low), and there is no rule of High Fall Creation, so the secondary forms have final high tones instead of high falling tones (e.g. lo̱:ŋ-é̱:t for the Mt. Elgon group vs. lo̱:ŋ-ê̱:t'shield' for the Rift Valley group). Floating Tone Attachment applies regularly giving forms such as ló̱:ŋ 'shield', etc.

Group "b" high-tone stem nouns again show no falling tone on the final syllable in secondary forms, and show the same rule of stem lowering found in group "a" high stems. (Remember that group "a" and "b" high stem classes are underlyingly distinct (/tí̱l + ya̱/ vs /kí̱s + yá̱/) as shown by the demonstrative tonal shapes.)

Finally, group "b" nouns which are cognate with Rift Valley falling-stem nouns are indistinguishable from group "b" low nouns in all respects in Kony (e.g. demonstratives are ye:t-yá:-ni̳ 'this bridge' and po̱:l-yá̱:-ni̳ 'this cloud' in Kony). Only examination of plurals will allow determination of underlying tone. The same stem lowering rule that operates with group "a" and "b" secondary forms here operates with primary forms and is responsible for the similar surface shapes (i.e. the derivational processes for L and F type "b" nouns are distinct). In Sapiny, the rule of Low Spreading preserves a distinction in primary forms (po̱:l-ya̱´ vs. ye:t-yá).

(36) (Kony)	*Low*	*Falling*	
	po̱:l + yá̱	yé:t + yá	underlying form
	N/A	ye:t + yá	Stem High Lowering
	lo̱:ŋ + á̱	má: + á	underlying form
	lo̱:ŋ + ´	má: + ´	Primary Suffix Deletion
	ló̱:ŋ	N/A	Floating Tone Attachment
	ló̱:ŋ	má:	surface form

3.3 TERIK

Terik speakers appear to have migrated from the Mt. Elgon area prior to the merger of high and high falling tones, since they preserve the earlier three-way tonal contrast. They have borrowed the rule of High Fall Lowering from Nandi (**rò:t-wa** 'knife'), but not Final Fall (**te̱:tá̱** 'cow', cf. Nandi **te̱:tà̱**). High Fall Creation and High Fall Raising are present (**no̱:ŋê̱:t** 'shield', **ó̱:rê̱:t** 'road'), but it is not possible to tell if these are borrowings or retentions. The Mt. Elgon rule of High Spreading is found in Terik, but it is restricted to primary suffixes (**tí̱n-yá̱** 'kindred', cf. Nandi **tí̱l-yá̱**).

4. PAKOT

4.1 TONAL PROCESSES

There are three underlying tonemes (H, L, F). There is no downdrift, no automatic downstep, and no downglide of final low tones.

(37) **mä̌cä̍y kï̱kă̱r** '(he) wants to shut (it)'

Low Raising

Low tones are raised to a mid level after a high tone, but unlike Nandi, only the first low tone is so affected (e.g. in (37) above). Cf. Nandi in (38):

(38) **máce̍y ko̱̍ké̱r** '(he) wants to shut (it)'

Rising Tone

Both short and long vowel high tones are realized as rising tones after low tones, falling tones and word-initially.

(39) **pâ̈kă:t** 'Pakot'

Rise Simplification

A rising tone, after a low tone and before a high tone is usually heard as a mid tone.

(40) ke̱:-si̱̍wá̱ 'to see'
ŋaca̍ré: 'chair'

Fall Simplification

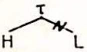
Falling tones are generally (except in very slow and deliberate speech) converted to high tones.

(41) /rô:t + wa̱/ → rǒ:t-wä 'knife'
/ô̱:r/ → ǒ̱:r 'road'

The low tone following such a raised high remains low, giving a surface contrast between low and raised low (mid) after high.

(42) /ä́y + wa̱/ → ä̌y-wä̍ 'axe'
/rô:t + wa̱/ → rǒ:t-wä 'knife'

(43) Fall Simplification



Fall Commutation Downstep

As in Markweta, a simplified fall will downstep a following high tone.

(44) rǒ:t-ꜜwé: 'knife (sec. form)', cf.
äy-wé: 'axe (sec. form)' (stem is underlyingly high rather than a fall)

(44) is derived as follows:

(45) rô:t + wa̱ + í̱t
rô:t + wé: Fusion, t-deletion
rô:t\` + wé: Fall Simplification
ró:t + ꜜwé: Fall Commutation Downstep
rǒ:t + ꜜwé: Rise Creation

Final Fall

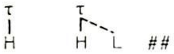
A final high tone which follows a high tone becomes a high falling tone.

(46) kǒ:k-wâ 'neighbourhood council'
kǒ̱:n-tâ̱ 'eye'
ro̱:p-tá̱ 'rain'

Note that a low-toned primary suffix will block Final Fall, although the surface form will show a high preceding the final high.

(47) lḯk + á̲ + í̲t → lḯk + é́: → (FF) lḯk + ê: 'war,raid'
ä́y + wa̲ + í̲t → ä́y + we: → ä̌y-wé: 'axe'

(48) Final Fall (Pakot version)



Floating Tone Attachment

Present in the same form as in all other dialects.

(49) ŋa̲ca̲r + á̲ → (PSD) ŋa̲ca̲r + ´ → (FTA) ŋa̲cá̲r → (s.f.) ŋa̲cǎ̲r 'chair'

Backwards Tone Spreading

As with the Northern dialect of Markweta, the high tone which originates on a primary suffix is also present on the final stem syllable in primary forms. This rule must apply after Final Fall since the final syllable in relevant forms does not have a fall.

(50) pǒ̲:l-tá̲ 'cloud' (cf. Nandi po̲:l-tà̲)
ŋa̲cá̲r-é̲: 'chair (sec. form)' (cf. Nandi ŋe̲ce̲r-ê̲:t)

High Fall Creation

This rule is not found (see above (50)) where ŋa̲ca̲r + á̲ + í̲t provides a suitable environment for HFC.

It is tempting to see Backwards Tone Spreading as an alternative to HFC, but the two rules coexist in North Markweta (ŋa̲cá̲rê̲: 'chair').

High Lowering

This rule also is not found.

(51) ke:-nǎ:n 'to remember' + rǒ:t-ꜜwé: 'knife' → ke:-na̍:n ró:t-.ꜜwé:
(with Rise Simplification)

4.2 NOMINAL MORPHONEMICS

There are three underlying (and surface) stem types (L, H, F), and two primary suffix types, L (type "a") and H (type "b"). These pattern as follows.

(52) type "a"

L	la̱:k-wa̱	la̱:k-wĕ̱:	'child'
H	ă̌y-wa̍	ă̌y-wé:	'axe'
F	rŏ:t-wä	rŏ:t-ꜝwé:	'knife'
	(rô:t-wä	rô:t-wĕ: - rarely)	

(53) type "b"

L	pŏ̱:l-tá̱	pŏ̱:l-té̱:	'cloud'
	ŋa̱că̱r	ŋa̱ca̱̍r-é̱:	'chair'
H	ŋĭ̱s-yâ̱	ŋĭ̱s-yê̱:	'grinding stone'
	să̱pï̱t	să̱pï̱t-ê̱:	'porcupine'
	rŏ:r-â	rŏ:r-ê:	'previously ploughed field'
	ŏ̱:r	ŏ:r-ê	'road'

The "a" group patterns exactly as do cognate sets for the Kipsikiis--Markweta group, with the exception of the changes wrought in the falling set by Fall Simplification. Type "b" low nouns also pattern like cognates in the Rift Valley group except that in the absence of High Fall Creation, the final tone on secondary forms is high. Backwards Tone Spreading provides an input for Rise Simplification with bisyllabic stems (producing ŋa̱ca̱̍ré̱: 'chair', etc.).

With the high and falling "b" stems, the pattern matches that of North Markweta. That is, the rule of Final Fall applies in the environment of a preceding high. This rule produces a fall on the final syllable of secondary forms. It is not clear that there are grounds for considering members of the high and low sets underlyingly distinct. I have not heard falling tone alternates for the F nouns in even the most careful speech, and there is no other obvious explanation for the failure of, e.g. ŏ̱:r-ê̱: 'road' to appear as ŏ̱:r-ꜝê̱:.

5. THE TONAL SYSTEM OF PROTO-KALENJIN

The proto-language had a basic inventory of three tones (surface and underlying). This is attested by the presence in all dialects of three basic noun stem types. Even the Mt. Elgon group, with present-day two-tone systems, shows evidence of this contrast: the rule of High Spreading spreads a high from a noun stem onto a low-toned primary suffix, but does not do so if the form is cognate with a falling-tone stem in the other dialects.

(54) áy + wa̱ → áy-wá 'axe' (Pok)
ró:t + wa̱ → ró:t-wa 'knife' (Pok)

From the point of view of the present-day dialects this fact must be treated diacritically (there is insufficient evidence to justify postulating an underlying falling tone in these dialects), but viewed historically the explanation is clear and is a crucial piece of evidence for the existence of a falling tone in the proto-language.

A fourth tone (the low-falling tone) is highly unlikely. First, it is found within only one group, and there not in all dialects. Second, there is internal evidence that the rule was added fairly late: the rule of High Lowering operates before a low-falling tone. The basic environment for High Lowering is a following high tone, so an example such as (55) is unnatural.

(55) kè:réy + ò̱:r → kè:rey ò̱:r '(he) sees (the) road'

Synchronically this is handled by ordering High Fall Lowering (ò̱:r is underlyingly ô̱:r) after High Lowering, but the historical explanation is simply that ò̱:r was historically ô̱:r.

Both on grounds of naturalness and in terms of comparative evidence, proto-Kalenjin lacked downdrift and did not have automatic downstep. Downstep from commutation of a falling tone is a northern innovation and was not present in the proto-language

If we look at the distribution of raised low tones, we can see that they are present either with four tone systems (Na, Ke, Tu) where the raised low prevents confusion of a low with a low-falling tone, or in Pakot where the raised low after a high contrasts with the unraised low after a falling tone which has simplified to a high and thus preserves (on the following syllable) the high/falling contrast. Since the proto-language lacked four surface tones, and since the Pakot rule of Fall Simplification does not go back to the proto-language, it is clear that the proto-language lacked Low Raising. Downglide of final low tones is evidently in complementary distribution with Low Raising across the dialects, so we may conclude that this was a feature of the proto-language.

High Fall Creation was not found in the proto-language. It is absent in Pakot where the only source of derived falling tones is Final Fall.

High Lowering was probably present (but was lost in Pakot and Markweta), since it is found in the Mt. Elgon group (Pok) and is not a natural rule.

It is difficult to determine if High Fall Raising was present in the proto-language. On the grounds that the Pakot rule of Fall Simplification is a generalisation of it, I will assume that it was present in the proto-language.

It is not likely that Final Fall was present in the proto-language. The distribution of the rule and its various forms suggest that it originated in Nandi-Keyo and spread from there.

The following chart summarizes the information and analysis which has been presented.

(56)

	p-K	*Na*	*Ke*	*Tu*	*Ki*	*Ma*	*Pa*	*Po*	*Ko*	*Sa*
Downdrift	-	-	-	-	-	-	-	+	+	(+)
Downglide (final low)	+	-	-	-	+	+	-	+	+	+
Auto Downstep-L	-	-	-	-	-	-	-	+	+	+
Auto Downstep-L̲	-	+	+	+	-	-	-	-	-	-
Low Raising	-	+	+	+	-	-	+	-	-	-
Mid-Low Fall	-	+	-	-	-	-	-	-	-	-
Rising Tone	-	x	(x)	-	-	x	+	-	-	-
High Fall Raising	+	+	+	+	+	+	+	-	-	-
High Fall Creation	-	+	+	+	+	+	-	-	-	-
Floating Tone Attachment	+	+	+	+	+	+	+	+	+	+
High Lowering	+	+	+	+	x	-	-	+	-	-
High Fall Lowering	-	+	+	+	-	-	-	-	-	-
Final Fall	-	+	+	x	x	x	x	-	-	-
Fall Commutation Downstep	-	-	-	-	-	+	+	-	-	-
Backwards High Spreading	-	-	-	-	-	+	+	-	-	-
High Spreading	-	-	-	-	-	-	-	+	+	+
Low Spreading	-	-	-	-	-	-	-	-	-	+
Rise Simplification	-	-	-	-	-	-	+	-	-	-

(The Pakot rule of Fall Simplification is considered to be a generalization of High Fall Raising here.)

Although there are scattered exceptions, the underlying tones of noun ste in proto-Kalenjin have been retained (or are recoverable) in each of the dialects. An important implication of this finding is that the basic nominal lexicon for proto-Kalenjin is reconstructible with regard to tonal values. the vast majority of lexical items, values from one or two dialects only wou suffice for this task. One note of caution is in order, however. For the majority of nouns, the stem tones in the plural are the same as in the sing once the organization of the tonal processes described above is recognized. This claim is substantiated in Creider (1979).

(57) à:-i:n-tèt (sg.) / á:-î:k (pl.) 'spirit' (Na)

re the underlying plural form is /â: + í̱ + í̱k/, and the high tone on the imary suffix triggers the High Fall Raising. The low falling tone on the sinular stem is due to High Fall Lowering.

A substantial exception to this singular-plural system tone agreement is found with certain types of plural formation processes where a canonical tonal value is given to the plural (i.e. where the underlying stem tones are not relevant). These processes, even when shared across dialects, are often not applied to the same lexical items in different dialects. I give two examples.

(i) Nandi has a canonical plural formation used with bisyllabic nouns and the -wa plural formative:

(58) $$\begin{array}{cccc} \mathrm{T} & \mathrm{T} & + & \mathrm{wa} \\ \vdots & \vdots & & \vdots \\ \mathrm{H} & \mathrm{L} & & \mathrm{L} \end{array}$$

singular		*plural*		
primary	*secondary*	*primary*	*secondary*	
ka̱sá̱r	ka̱sa̱r-tà̱	kásar-wa	kásar-wé:k	'space'
kó̱mâ̱s	kó̱ma̱s-tà̱	kómas-wa	kómas-wé:k	'side'
sirìm	sirím-tâ	sírim-wa	sírim-wé:k	'chain'

Here the plurals give no clue to the basis stem tones. In Kipsikiis, however, this plural formation process does not apply.

(59) ka̱sá̱r	ka̱sa̱r-tá̱	kasar-wá	kasar-wê:k	'space'
ké̱mó̱s	kó̱mo̱s-tá̱	kómos-wá	kómos-wê:k	'side'
sirîm	sirím-tá	sirím-wá	sirím-wê:k	'chain'

(ii) Most dialects have a rule giving all high tones to plural forms, but t frequency of use of this form with different plural formatives varies acros dialects. E.g., it is rarely used in Nandi with nouns with the -á̱y plural formative, but it is virtually always used here in Terik.

(60) sikir + á̱y + í̱ + í̱k → síkír-áî:k 'donkeys' (cf. Nandi sikir-á-î:k

6. SOME CONCLUDING COMMENTS

In concluding this paper I would like to discuss informally some pr and directions for the next stages of comparative work. Examination of nominal lexicon for proto-Kalenjin shows that all falling tone stems ar It is thus possible that at some earlier stage in Kalenjin linguistic c ment there was a two tone system (H, L) which developed into a three t (H, L, F). One possible mechanism is syllable loss as exemplified in

Markweta relic form **mórθ:k** 'throat' (the fall on the final syllable is due to Final Fall) which may be compared with South Markweta (and the other dialects as well) **mθ:k**. A more likely process is suggested when we note that although there are reconstructible long H stems, the number of these is rather small, and many are recent loans. A general change of all long high stems to high falling is thus a possibility. Further work on Datooga and Omotik may provide the answer (which is of some theoretical interest since our knowledge of processes leading to the development of falling tones is at present unsystematized and no doubt incomplete).

With regard to comparison between Southern Nilotic and the rest of Nilotic, my knowledge of the tonal systems of the Western and Eastern languages is largely limited to (Kenya) Luo and Maasai, but I note that both of these languages have what are basically two-tone (H, L) systems. In Luo, the immensely complicated surface tonetics reduces easily to a simple underlying system (ignoring details which complicate this but which are not relevant historically). The majority of surface falling tones are derived (either synchronically or historically in the case of some instances of morphological tone) from a high spreading rule of exactly the same type as that found in the Mt. Elgon Kalenjin dialects. In Maasai, surface falling tones (on single syllables) are rare, and quite possibly are all rule-derived (synchronically). There is thus the possibility that proto-Nilotic had a two-tone system (if the case for an innovation of a falling tone in proto-Kalenjin or proto-Southern Nilotic can be sustained, and assuming that what is true of Luo and Maasai is true of the other Western and Eastern languages and dialects).

Finally a note about vowel length. Neither Maasai nor Luo have underlying long vowels. I have no answer to the question of their origin in Kalenjin (beyond noting that there is no obvious environment in which they could have developed in proto-Kalenjin or proto-Southern Nilotic), but it is possible that the answer to this puzzle will be of relevance to the puzzle of the origin of falling tones in proto-Kalenjin or proto-Southern Nilotic.

APPENDIX A: SYMBOLS, DEFINITIONS OF TERMS AND ABBREVIATIONS

´, H	high level tone
, L	low level tone (unmarked)
ˈ, M	mid tone
^, F	high falling tone (high to low)

^, F̱	low falling tone (low to extra-low)
ˇ, R	rising tone (low to high)
!	downstep operator
▪	final downglide (low tone)

Segmental symbols have IPA values except as follows: **p**, **t**, **c**, **k**-are voiced under certain conditions (see Tucker 1964 for details). **r** is a tap in all dialects except Markweta and Pakot where it is trilled. Underlined vowels are [-ATR], others are [+ATR]. Although done here for typographical convenience, the use of the IPA 'open' vowel symbols to denote [-ATR] vowels can be very misleading. For example i̱ is not appreciably more 'open' in quality (i.e. of lower longue height) than i, and u̱ is quite close to IPA cardinal 7 ([o]) in quality (as evidenced by Crazzolara (1978): **kookat** 'doorway' where the first vowel is u̱, etc.). ï, ï̱, and ä̱ are central vowels.

Downdrift: this term is reserved for the lowering of successive highs or successive lows (cf. Tucker and Creider 1975).

Downstep: the lowering in register of tones following a low tone or an extra-low tone.

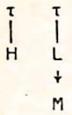
Automatic downstep: downstep with a surface low or extra-low tone (note: this process is sometimes called downdrift in the literature).

Phonetic transcription of language names:

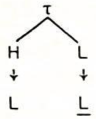
Kalenjin		ká:lé:njí:n	(Ki)
Ki	Kipsikiis	ki̱psi̱gí̱:s	
Na	Nandi	nă̱:ndî̱	
Ke	Keyo	kéyyθ	
Tu	Tuken	túgėn	
Ma	Markweta	má̱rkwê̱:ta̱	
	Sabaot	sabaó:t	(Sa)
Sa	Sapiny	sá̱bi̱:ny	
Po	Pok	pó̱:k	
	Pong'om	po̱:ŋó̱m	
Ko	Kony	kú̱:ny	
Pa	Pakot	pâkă:t	
	Terik	terik	

APPENDIX B: TONAL PROCESSES

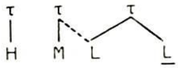
Low Raising



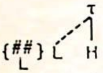
High Fall Lowering



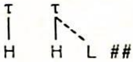
Mid-Low Fall



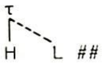
Rising Tone



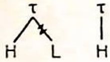
Final Fall (Pakot)



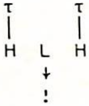
Final Fall (Na, Ke)



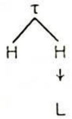
High Fall Raising



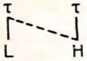
Fall Commutation Downstep



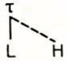
High Fall Creation



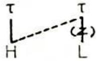
Backwards High Spreading



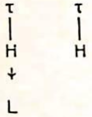
Floating Tone Attachment



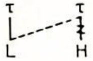
High Spreading



High Lowering



Low Spreading



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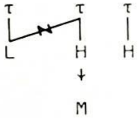

NOTE

* I am grateful to the University of Western Ontario for the sabbatical leave during which this research was undertaken, to the Social Sciences and Humanities Research Council of Canada for a Leave Fellowship and Research Grant which made it possible, and to the Government of Kenya and the University of Nairobi for facalitating my research in Kenya. I am also grateful to Dr. Franz Rottland for making available to me a prepublication version of his comparative Southern Nilotic work and for much discussion of the various Kalenjin dialects. See Appendix A for a list of symbols and definitions of terms used. To increase readability most tonal processes are described informally in the text, and formal statements are given only in Appendix B. The theoretical framework of autosegmental phonology is used (Goldsmith 1976).

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Rainer Voßen

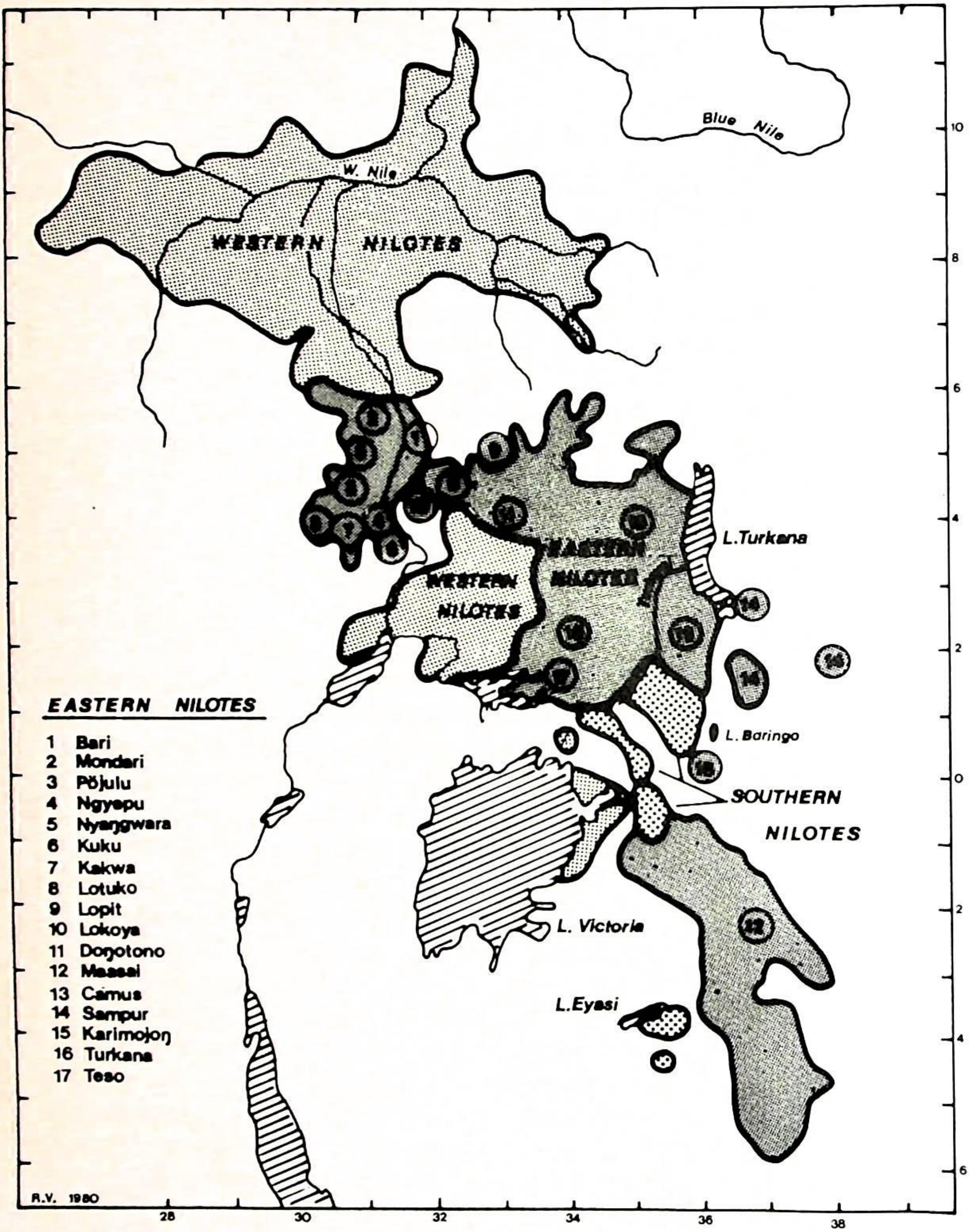
The Classification of Eastern Nilotic and its Significance for Ethnohistory

1. INTRODUCTION

For the reconstruction of historical processes in Africa, particular importance is usually attached to historical linguistics if the application of traditional methods of the science of history has to be abandoned because of the insufficient or inadequate sources; or if the methodology of oral tradition, though especially developed for the investigation of illiterate societies, falls short of temporal dimension of early historical events; or if, for example, the application of archaeological approaches, which are said to be relevant to any period of history, however, yields results requiring a corrective.

The study of Nilotic history in general, and of the Eastern Nilotic history in particular, is on a large scale dependent on the assistance of historical linguistics. Written documentary sources for the precolonial periods are very scarce, oral traditions have been collected (but not always made available to others) among just a few ethnic groups or tribes, often in an unsystematic way, and the archaeological disclosure of the Nilotic territories is still in its early stages. No doubt the ethnohistorical utilization of linguistic methods bears various uncertainties which have been sufficiently discussed elsewhere. Yet it would presently seem that we are by no means in a position to totally abandon historical hypotheses based on linguistic evidence, and in actual fact there is no need to do so as long as all problems connected therewith are borne in mind and statements are made and utilized very cautiously.

The aim of the present paper is two-fold. In the first place, a genetic classification of Eastern Nilotic languages, for the first time based on a systematic historical comparison resulting in a number of phonological and lexical reconstructions, will be proposed, and some evidence for this classification will be furnished. Secondly, I shall briefly discuss possibilities and perspectives of interpretation of the linguistic results with regard to ethnohistory. Despite the conclusive character of some single statements, the present reconstruction of aspects of Eastern Nilotic linguistic and ethnohistory is on the whole to be considered provisional.



Approximate distribution of Nilotic peoples
(After Oswin Köhler 1955)

2. THE RESEARCH SITUATION SO FAR

The term "Eastern Nilotic" was introduced by O. Köhler in 1948 to first designate one of the two primary branches of Nilotic (the other being named "Western Nilotic") comprising those languages which are formerly referred to as "Nilo-Hamitic" or "Niloto-Hamitic" languages (Köhler 1948). A few years later, Köhler restricted its use to the languages of those peoples whose present-day territories stretch from the southeast of the Republic of the Sudan over northeast Uganda, northwest as well as southern Kenya down to northeast Tanzania, and whose economy and culture are said to be grounded on animal husbandry, especially cattle-breeding, since times immemorial (Köhler 1950, 1955).

Although Köhler was the first scholar to clearly substantiate his classification linguistically, Eastern Nilotic internal relations had been partly revealed and occasionally described by others long before. As early as 1880, for instance, R. Lepsius had stated a close relationship between Bari and Maasai (Lepsius 1880:lvi), which was corroborated by B. Struck decades later (1911: 109). D. Westermann adopted Struck's Bari-Masai group to which he assigned (among others) Maasai, Teso, Karimojong, Turkana, and Bari, but failed to include Sampur ("Burkeneji") as well (1912:35). In 1920, G.W. Murray listed Turkana and Lotuko as subgroups of Maasai besides Bari (Murray 1920:329), a division which was maintained by A. Drexel in his highly questionable outline of Nilotic linguistic relationships (1925:237ff). Another classification worth mentioning in greater detail was offered by C. Muratori. In his well-known *Grammatica Lotuxo*, which was published in 1938, he paired his wide knowledge of the Lotuko dialects with the result of a simplified comparison among Lotuko, Bari, Karimojong, and Maasai which was summarized thus:

> Il Lotuxo lessicalmente, foneticamente, grammaticalmente è più vicino al Karimojong e al Masai che non lo sia il Bari; inoltre è più vicino al Karimojong che non al Masai e al Bari. Però il Masai e il Karimojong ci presentano qualche volta delle radici più simili nella forma al Bari che non al Lotuxo. Ciò significa la derivazione dei suddetti linguaggi da una lingua madre in modo indipendente, e non attraverso all'uno o all'altro de essi.

Once a successive descent of Eastern Nilotic languages from the proto-language was denied, Muratori established six more or less independent subgroups/branches: Bari (including its various dialects); Lopit-Dongotono-Lorwama; Lokoya-Lango; Lotuko (Xoryok, Lomya); Boya-Toposa-Karimojong-Teso-Turkana; and Maasai.

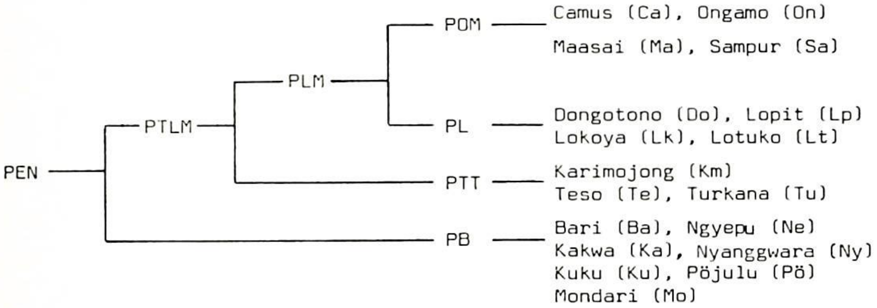
What is essentially new in Köhler's contribution was the strictness of comparison of phonological systems by exhausting all published and unpublished data available at that time, with the consequence that two primary branches of Eastern Nilotic were to be distinguished: Bari-Maasai (including Lotuko) and Teso-Turkana (see Köhler 1948:120, Table I; 1950:178; 1955:85).

Three more noticeable publications containing information on Eastern Nilotic language relationships appeared in the 1950s. Whereas J.H. Greenberg in his first exposition of the "Eastern Sudanic Family" made no attempt at subgrouping (1950:143; 1955:62), S. Verri proposed to distinguish four "Nilo-Hamitic" groups: Bari, Lotuko, Toposa-Turkana, and Maasai (Verri 1955:318). A similar division, though arrived at by different methods, was offered by A.N. Tucker and M.A. Bryan in the *Handbook of African Languages*, where, in addition, the newly discovered Ongamo ("Ngasa") has tentatively been classed as forming a "Single Unit" (1956:106ff). The existence of four basic groups of Eastern Nilotic languages was by then widely considered as certain. Also, Greenberg in a revised version of his *Studies in African Linguistic Classification* decided to take this fact into account but nevertheless grouped the Teso-Turkana languages together with Maasai such as to form one of two primary branches, Bari being the other one (Greenberg 1963 and 1966:85f).

For many years the problem of Eastern Nilotic language classification remained untouched. In the early 1970s, C. Ehret opened up a promising field of investigation. He was the first scholar to deal with Nilotic language history for the purpose of ethnohistorical reconstruction. Primairily in three publications Ehret has tried to prove that "Eastern Nilotic classifies into two subbranches, one with the single language Bari and the other, which may be called Teso-Masaian, with the rest of the Eastern Nilotic languages" (Ehret 1974:40, ftn. 4). Although Ehret's methodological procedure, especially the lexical reconstructions for the various proto-stages, are open to much criticism, the classification by itself deserves attention (see Ehret 1971; 1974; esp. Ehret et al. 1974:92, 94f).

3. THE RECLASSIFICATION OF EASTERN NILOTIC

At the present stage of investigation, my own findings tend to verify Ehret's sketchy reconstruction of Eastern Nilotic language history. Accordingly Proto-EASTERN NILOTIC first split into two primary branches, i.e. the BARI branch and the TESO-LOTUKO-MAA branch, which I shall henceforth simply refer to as NON-BARI. Within the latter branch, a secondary split-up took place, thus separating the TESO-TURKANA languages from LOTUKO-MAA, which finally broke up into Proto-LOTUKO on the one hand, and Proto-ONGAMO-MAA on the other. Although two different lexicostatical classifications (based on approaches proposed by Swadesh and Gleason 1959, respectively) suggest that three of the four main groups (BARI seems somewhat problematic!) might be successfully subdivided, I have made no such attempt for mainly two reasons. First, some languages or dialects known to belong to either the TESO-TURKANA Group (Dodos, Jie, Jiye, Nyangatom, Toposa) or the LOTUKO Group (Logir, Logiri, Lokathan, Lomya, Oxoryok) could not be taken into account due to lack of authentic data. Second, the reconstruction of language developments above the group level would seem to be more rewarding with regard to ethnohistorical conclusions. In summary, the classification as proposed above can be figured as follows:



PEN = Proto-EASTERN NILOTIC
PTLM = Proto-TESO-LOTUKO-MAA;
PLM = Proto-LOTUKO-MAA;
PB = Proto-BARI
PL = Proto-LOTUKO
POM = Proto-ONGAMO-MAA
PTT = Proto-TESO-TURKANA

4. PHONOLOGICAL AND LEXICAL RECONSTRUCTIONS

So far about 275 lexical items have been analysed and systematically compared. More than 180 different roots have been reconstructed for PEN, PTLM, as well as PLM. About 75 reconstructions each may be regarded as safe (S) or probable (P), respectively, the rest appear to be questionable (Q). The chief criterion for such categorizations is the certainty of the established series of regular sound correspondences participating in a given reconstruction.

I shall now try to substantiate my own classification on the basis of these phonological and lexical reconstructions. Further confirmation is occasionally obtained from grammatical evidence. Unless otherwise stated, all data given in the following sections are mine. Lexemes are morphologically segmented in both synchronic and diachronic respects. Synchronic segmentation is marked by full stops. A hyphen indicates diachronic segmentation. Nouns are usually cited in their singular forms and verbs in the infinitive. Tone-marking in most cases is tentative. The following symbols are used: high tone ´ (á), low tone ` (à), high-falling tone ˆ (â), and low-rising tone ˇ (ǎ). Mid tones are left unmarked (**a**). For reason of economy, examples of phonological, grammatical, and lexical differences are given in limited numbers.

4.1 Bari versus Non-Bari

4.1.1 Phonological Arguments

Consonants

(1) A voiced palatalized alvolear stop *dʸ is reconstructed for PEN. In medial position, it occurs as d in BARI and as ɟ in NON-BARI. Examples:

	'fly n.'	'old'	'tongue'
Ba	kɔ-dɔŋ-á-n.tì	mɔ́dɔ́ŋ '- of animates'	ŋɛ́-dɛ́p
Ny	ko-doŋ-ó-tì	mɔ́dɔ́ŋ	ŋɛ́-dɛ́p
Te		ɛ́-mɔ̀ɟɔ̀ŋ	á-ŋà-ɟɛ̀p
Tu		moɟon	a-ŋa-ɟɛp (Heine 1978)
Lp	xa-ɟáŋ-a-tí		ŋá-ɟɛ́p
Lt	a-ɟan-á-ðì		ɔ́-ŋà-ɟɛ̀p
Ma	ɛŋ-kɔ-ɟɔŋ-á-nì 'mosquito'		ɔl-ŋɛ́-ɟɛ́p
On			ɔ-ŋɛ́-ɟɛ́β-í

Word-finally, however, PEN *dʸ is reflected as a glottal stop ʔ in BARI and Ø (zero) in NON-BARI. That this as yet somewhat weak series of correspondences ought to be assigned to PEN *dʸ is concluded from the occurrence of suffix-initial ɟ in ONGAMO-MAA plural nouns. Compare:

	'goat'		
Ba	kí-néʔ	Lp	hí-né
Ny	kí-néʔ	Lt	é-nìè
Te	a-kí-nè	Ma	eŋ-kí-né
Tu	a-ki-ne (Heine 1978)	On	na-ʃí-né

(2) PEN *tʸ is set up as voiceless counterpart to *dʸ for the following series of correspondences: BARI ʔ (sg)/l (pl) : NON-BARI Ø / t (in ONGAMO-MAA

only). So far it has been noted stem-finally only. Examples:

	'moon/month'	'path/road'
Ba	yápàˀ/yápál-à	kɪ́-kɔ̀ˀ / kɪ́-kɔ́l-ɪ̀n
Ny	yápàˀ/yapál-à	kɪ́-kɔ̀ˀ / kɪ-kɔ́l-ɪ̀n
Te	ɛ-láp$^{\text{à}}$	
Tu	ɛ-lap (Heine 1978)	
Lp	yaɸá	
Lt	a-yáfà	ɛ́-kɔ̀.ɪ̀ / ɛ́-kɔ̀.t-ɪ́à
Ma	ɔ-lápà/ɪ-lapa.it-ɪ́n	eŋ- kóɪ́t-óɪ́/iŋ- kóɪ́t-òí
On	ɔ-háβà (Ehret 1967)	(nɪ́- kɔ̀ɪ̀)

(3) Besides PEN *t_1 (which is reconstructed for a series of correspondences found between the unvoiced alvolear obstruents t of all Eastern Nilotic languages) a "proto-phoneme" *t_2, which in all likelihood has to be phonetically distinguished from the former one, is hypothetically set up. It is found in word-medial position only and was retained as t in the languages of the TESO-TURKANA Group, whereas in BARI and PLM it would seem to have equally, though independently, developed into *s. Compare:

	'cattle'	'nose'	'tick'
Ba	kɪ́-sú-k	ku-me-sík.ò (pl)	masír-èt
Pö	kɪ́-sʊ́-k	ku-me-sík.òn (pl)	
Te	a-kɪ-tʊ-k		
Tu	ŋa-a- tʊ-k (Heine 1978)		
Lp	xʊ́-sʊ́-ŋ	me-sɪ́ˀ (pl)	
Lt	ê-sù-ŋ	á- mɔ̀-sɛ̀(ˀ) (pl)	a-meser-i (Muratori 1948:225)
Ma	iŋ-kɪ́-ʃú	iŋ-ku-me-ʃɪ́n (pl)	ol-máʃér-ɪ̀
On			ɔ-máʃér-i

(4) A regularity of correspondences seems to occur between BARI gw and NON-BARI uw or ww. It is assumed that this series, which does not occur stem-internally, is derived from a PEN voiced labio-velar stop *ɡw. Examples:

	'arrow/bow'	'calf/heifer'	'leopard'
Ba		tagw-ɔk 'calf' (Muratori 1948:26)	gwɔr-ɔŋ 'wild beast' (Mur. 1948:13)
Mo		tágw-ɔ́k 'calf'	
Ne			gwɔ́r-ɔ́ŋ
Te	a-káúw-a 'bow'		
Tu	á-kau 'bow' (Heine 1978)		
Do	xaúw-ò 'arrow'	táúw-ó 'calf'	xú-wwár-ù
Lt	auw-o 'arrow'	á-ðàww-ó	á-ùwòr-ù
Ma	ɛŋ-káww-ò 'bow'	ɛn-táww-ó	ol- o-wwar-ú
On		na-táww-ó	na-ho-wwar-ú

(5) In only two items a correspondence between BARI j and NON-BARI **ri** has been observed in word-final position. For this series a PEN consonant sequence *rj is tentatively reconstructed. Compare:

	'night'	'rat'
Ba	tʊ́-k -wáj -ɛ̀	mij -ɪ 'mouse' (Spagnolo 1960:186)
Ny	k -wáj -ɛ̀	míj -ɪ́
Km	a-k -war̄ị (Köhler 1970)	miri-ω (Johnston 1904:907)
Te	a-k -wáárɪ̀	e-mírì
Lk	ta-ɣ -árɨ́ -é	
Lp	x -arí -è	
Ma	ɛŋ-kɛ-warí-é	
On	ʃ -arí -é 'at night'	

(6) More evidence is needed to corroborate the reconstruction of a PEN intervocalic glide *y. So far it is merely found in the items 'bone' and 'locust', where it has been retained in the languages of the BARI Group but disappeared in NON-BARI languages.

	'bone'	'locust'
Ba	kuyú-tìò	mayat-ti 'migratory locust' (Muratori
Ka	kʊ́yú	maya (Czekanowski 1924:691) 1948:135)
Te	á-k ɔ́ɪ̀ -t	e-m aa s-e (Hilders and Lawrance 1958:17)
Tu	á-k oí -t (Heine 1978)	ɛ-m áá s-í 'grasshopper'

Do	xoí-tò		
Lp	xoí-tòì		
Ma	ol- óì-tò	ɔl-máàt-ì	
On	o-hóí-to	ɔ-máàt-î	(Ehret 1967)

Vowels

(7) A regularity of correspondences can be observed between BARI **u** and NON-BARI **o**. For this series, which occurs only preceding high vowels or the sequence consonant-plus-high vowel, respectively, PEN ***o** is set up. Examples (cf. also 'bone', 'arrow'):

	'feather/hair'			'giraffe'	
Ba	kupir-ét			kú-rí-t	
Ny	kɪpɪr-ɛ́t			kú-rì-t	
Te	a-kopir-ót	'feather'		e-ko-ri	(Hilders & Lawrance 1958:12)
Tu	a-kopir-o	'feather'	(Heine 1978)	é-ko-ri	(Heine 1978)
Do	xoɸír-ì.tì			ko-ri	(Driberg 1932:604)
Lp	xoɸír	(pl)		o-ho-ri	(Ehret 1974a:90)
Ma	eŋ-kópír-ó	'feather'			
On	o-hoβír	'feather'			

4.1.2 *Grammatical Arguments*

The actual reconstruction of grammatical elements is beyond the scope of the present study. Yet some of the most striking morphological differences between BARI and NON-BARI seem noteworthy. They are listed here as "simple" further evidence supporting the basic classification of Eastern Nilotic.

Nouns

(8) PEN as well as its subsequent daughter languages PTLM and PLM must be assumed to have had a noun-gender system. This may be concluded from the occurrence of at least two grammatical genders (masculine and feminine) in all modern Eastern Nilotic languages. In the dialects of the BARI Branch the gender of most nouns is reflected only in gender agreement. In the languages of the NON-BARI branch nominal gender is marked by means of prefixes almost throughout.

(9) The distinction of nominal case functions is another characteristic

of the NON-BARI languages as against BARI. It may have existed in both PTLM and PLM, though the case of the LOTUKO Group is uncertain (cf. also Muratori 1938: 59ff; Tucker and Bryan 1966:467F). Nominal case is marked by tone in ONGAMO-MAA, Teso, and Turkana. In Teso affixes and change of final vowels are additional means, according to Tucker and Bryan (1966).

Verbs

(10) All languages originating from PTLM are known to group their verbs into two morphological classes, which were simply referred to as verb class I and verb class II by Tucker and Bryan (1966:450F), or as the TO and KI classes, respectively, by Heine and Vossen (1975/76:90). Verbs belonging to the KI class are characterized by a stem-initial vowel i or ɪ which is missing with TO verbs. No such distinction is found in the BARI languages.

4.1.3 Lexical Arguments

(11) Considerable support for our classification is drawn from lexical evidence. All in all 36 items (18 nouns, 14 verbs, 4 adjectives/numerals) are reconstructed for PTLM but not for PEN. Possible counterevidence is limited and adds up to altogether 16 items (BARI + LOTUKO versus others: 6, BARI + TESO-TURKANA vs. others: 6, BARI + ONGAMO-Maa vs. others: 4).

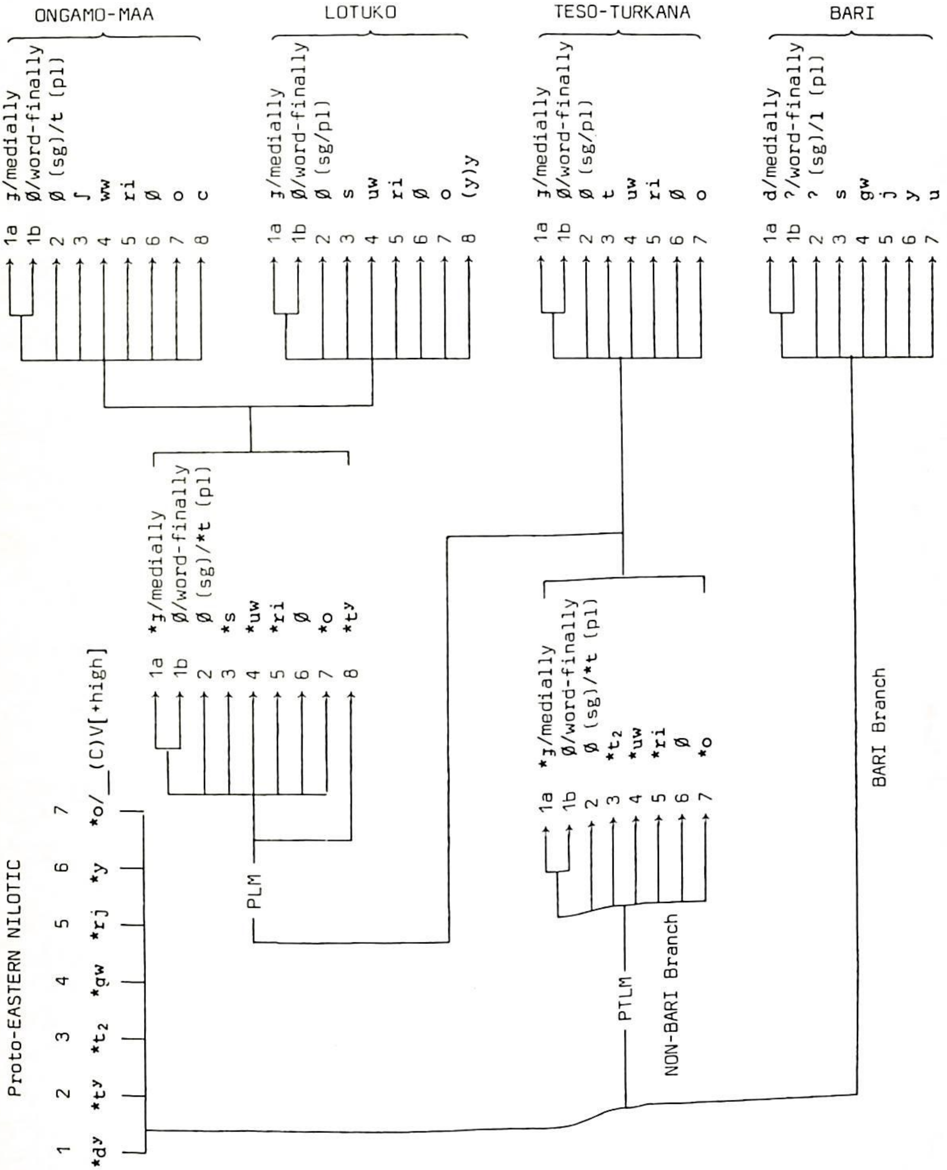
4.2 TESO-TURKANA VERSUS PLM

So far the hypothetical derivation of the LOTUKO and ONGAMO-MAA languages from a common ancestor language called PLM as opposed to TESO-TURKANA is almost exclusively based on lexical evidence. 47 items are reconstructed for PLM which are not shared by languages of the TESO-TURKANA Group (22 nouns, 18 verbs, 4 adjectives/numerals, 3 personal pronouns). Only 17 items (TESO-TURKANA + ONGAMO-MAA vs. LOTUKO: 9, TESO-TURKAN + LOTUKO vs. ONGAMO-MAA: 8) are known not to harmonize with the establishment of PLM.

Moreover, a few cases of PLM secondary developments parallel to PTLM are noted. Compare the following reconstructions:

	PTLM/PLM	PLM
'to be dead/die'	*-tuan$_2$- (TO) [Q/P]	*-yɛ- (TO) 'to die' [Q]
'mountain/stone'	*-mor-u [S]	*-ɗoŋ$_2$- 'mountain' [Q]
'to suck'	*-nak- (TO) [P]	*-ɗas- (TP) [Q]

Table: *Summary of phonological changes*



4.3 LOTUKO VERSUS ONGAMO-MAA

The split-up of PLM into two independently developing languages, i.e. Proto-LOTUKO and Proto-ONGAMO-MAA, could be sufficiently demonstrated by solely listing lexical divergences. More interesting, however, are the following instances of phonological changes.

(1) Two items have been observed showing correspondences between LOTUKO y ~ yy and ONGAMO-MAA c ~ ʃ in stem-initial position. For this series a PLM proto-phoneme *t^y is tentatively set up. Whether this phoneme is derived from PEN *t^y occurring stem-finally only, remains to be investigated. Compare:

	'skin'		'tree'	
Lk			o-y án.í	'plant,tree' (b1)
Lp	yyoní	'animal skin'	yyánì	
Lt			á-yyànì	
Ca	l-coní	'skin of men, cows'	l- c aní	
Ma	ol-coní		ɔl- c aní	
On	na-ʃoní			
Sa	l-coní	'skin of men, cows'	l- c aní	

(2) The voiced labio-velar stop *gw reconstructed for PEN is assumed to have gradually developed into PTLM and PLM *uw. Whereas it remained like this in present-day LOTUKO, a change PLM *uw > POM *ww has taken place. For examples see under "BARI versus NON-BARI", case no. (4).

(3) The reconstruction of a word-medial PLM proto-phoneme *s as being derived from PEN *t_2 has earlier been mentioned. It is based on the observation of LOTUKO s corresponding regularly to ONGAMO-MAA *ʃ. For examples see under "BARI versus NON-BARI", case no. (3)

5. ETHNOHISTORICAL INFERENCES

The contribution of historical linguistics to the reconstruction of Eastern Nilotic ethnohistory can, roughly speaking, be discussed under three major aspects: the territorial aspect, the economic aspect, and the social aspect.

By territorial history is meant: first, the determination of homelands of the proto-communities which are assumed to have been the speakers of the hypothetically reconstructed ancestor languages; second, the elaboration of migration patterns that, in the light of these homelands, are appropriate to sufficiently explain the present-day language distribution.

As yet none of the two aims can be achieved on the basis
method. It is generally held that, with reference to th
related languages, the greatest linguistic differentatio
smallest geographical area is decisive for localizing th
Heine (1976:7) has proposed the term "topo-genetic appro
correlations of genetic language classification with lan
the Eastern Nilotic context, Ehret et al. were the first
topo-genetic approach. He concluded (1974:93f):

> Proto-Lotuko-Masai is most likely to have been spo
> ly in the region where Uganda, Kenya, and Sudan com
> sub-group [i.e. TESO-TURKANA] (coordinate with Lotu
> two languages. Again, one language, Teso, is (rela
> ly distributed, while the other is spread over a ve
> hence, again, more weight must be given Teso, and t
> land placed in central eastern Uganda, a conclusion
> oral traditions. The combined locations inferred f
> and proto-Itung'a would thus set the proto-Teso-Mas
> broadly in the northeast quarter of Uganda. The lo
> language of the other primary branch of Eastern Nil
> overall center for the early Eastern Nilotic speake
> and west of this region of Uganda and suggests that
> Nilotic homeland is probably to be placed in the m
> areas along the east of the Nile.

There is no alternative suggestion to this reconstr
the more since a revision on the basis of I. Dyen's cont
theory (1956) has shed no further light upon the point.
chaeological contribution to the question of Eastern Nil
settlement patterns, which has recently been published
(1979), appears to be of importance. A widely distribut
found on the western side of Lake Turkana and adjacent a
Uganda, which was radiocarbon dated to the times betwee
is said to be closely associated with Eastern Nilotic sp
ical area referred to, however, is hardly relevant as
the Proto-Eastern Nilotes' homeland, as the authors have
owing to misinterpretations of evidence presented by Eh
1979:323ff). Equally unlikely seems to be the assumptio
even PTT speakers were the bearers of this so-called Tu
mainly temporal reasons; even though this cannot entire
all we know about the chronology of Eastern Nilotic lan
from highly tentative glottochronological datings. At
sible hypothesis would seem to attribute the Turkwell
of Ehret's proto-Itung'a (Proto-Teso-Turkana). Or, al

possible that one has to think of an extinct Eastern Nilotic population which has left no linguistic traces behind?

A decisive factor in the overall reconstruction of early Eastern Nilotic history, of which I have hitherto made no mention, is the problem of contacts, as Ehret puts it. Unidirectional or mutual influences among Western Nilotic populations themselves on the one hand, and between Eastern Nilotes and genetically less closely or non-related peoples, especially Southern Nilotes and Eastern Cushites, on the other, can be concluded from loan evidence. It plays an important rôle in economic and social history.

Although considerable differences in the economic systems can nowadays be observed between the various Eastern Nilotic tribal groups, and sometimes even between members of smaller units (e.g. clans, lineages, etc.) of such tribal groups, the keeping of livestock appears to have been the main economic feature common to all Eastern Nilotes from ancient times. It is so widely distributed also among Western and Southern Nilotic peoples that one is led to assume the common ancestors, the Proto-Nilotes, to have been pastoralists in as pure and ideal a way as is found among several Maa-speaking peoples, where cattle plays a prominent part in many aspects of life. Interestingly enough, from a linguistic point of view, such an assumption would seem to hold good only partly for the period of the Proto-Eastern Nilotes. Of the vocabulary concerning animal husbandry, words such as 'calf/heifer', 'cow/cattle', 'goat' , 'hump of cow' or 'milk' can be shown to go back to PEN whereas others, especially more specific terms like 'bull/ox', '(cow)dung', 'to churn', 'to flay/slaughter', 'he-goat', 'to milk', 'ram' or 'udder', can be reconstructed only for the subsequent periods of the Proto-Teso-Lotuko-Maa and Proto-Lotuko-Maa communities, respectively. Even more specific words such as 'arrow for bleeding cattle', 'castrated bull', 'bull-calf', 'calf-pen', 'virgin ewe', 'lamb', 'branding iron', 'donkey', allow for setting up reconstructions solely on the group or subgroup level within the NON-BARI Branch, predominantly for POM and/or Proto-Maa. Generally speaking, the tendency seems to be that, in the domain of animal husbandry, the more specific the terms the less the number of possible reconstructions outside the ONGAMO-MAA Group.

Ehret has successfully attempted at proving such specific words, also within the semantic domain of social structure and organisation, as borrowings from chiefly Southern Nilotic, Southern, and Eastern Cushitic sources (Ehret 1971: 164-172; 1974:77f, 88f). All the same he emphasized that "for the Eastern Nilotic peoples as a whole no direct Cushitic influences of any great importance can be demonstrated" (Ehret 1974:40). What apparently appears to be a contradiction in terms, is in fact nothing but the cautious suggestion of possible intermediary borrowing. An exemplary study of such processes, indeed, has clearly demonstrated, that at least Proto-Maa has adopted a number of loanwords from a nowadays extinct Eastern Cushitic language, named Proto-Baz, via Southern Nilotic (Heine, Rottland & Vossen 1979:85f). The probability of a Proto-Baz presence to the west of Lake Turkana, dated to some time in the first millenium B.C., has been strenghtened through the recent discovery of three prehistoric sites in the area, which are radiocarbon dated to B.C. 335, and must in all likelihood be ascribed to an Eastern Cushitic population (Lynch and Robbins 1979:320ff).

Finally, the foreign (Cushitic?) impact on economic and social developments among (Proto-)ONGAMO-MAA speaking populations seems recognizable even by "negative" linguistic evidence. Thus, for example, it is known that to the present day the consumption of fish, chicken, and eggs is forbidden among the majority of the MAA-speaking community. Yet words for 'chicken' and 'egg' are reconstructable for the PEN and PTLM periods (but not for POM/Proto-Maa) suggesting that the ONGAMO-MAA food taboos are not inherited from the Proto-Eastern Nilotic forefathers but rather originate from contacts with genetically less closely or non-related peoples. In spite of a lack of clear-cut linguistic evidence, the same must be assumed with regard to the consumption of fish, since the Eastern Nilotes (?) associated with the aforementioned Turkwell Tradition are characterized as both pastoralists and fishermen (Lynch and Robbins 1979:327).

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On Verbal Derivation in Nilotic: The Case of Turkana

1. INTRODUCTION

This paper is about the verbal system of Turkana, a language belonging to the Eastern Nilotic branch of Nilotic, one of the ten branches of Eastern Sudanic (Greenberg 1966:86). More specifically, this study deals with the form and function of derivational suffixes within the verbal complex at the synchronic level, as discussed in the first part of the paper. The historical status of these suffixes is dealed with in the second part. It is suggested, through internal and comparative evidence, that Turkana has made a number of innovations in its verbal system. An initial attempt is made, subsequently, at the reconstruction of some verbal aspects of proto-Nilotic.

2. THE VERB

The verb in Turkana consists, in its most complex form, of a verbal root preceded by inflectional affixes indicating negation, person, tense and mood, and followed by derivational affixes and inflectional affixes indicating mood, aspect and number.

A verbal root belongs to either of two morphological classes: class 1 or class 2. The latter type of verbal roots all have an initial high front vowel with low tone. The shape of a specific verbal affix often depends on the morphological class to which the verbal root belongs, as can be illustrated with the imperative mood.[1]

Class 1		Class 2	
tɔ-ɲam → [tɔ́ɲám]	'eat!'	kì-ìdɛt → [kìdɛ́t]	'beat!'
(root: -ɲam)		(root: -ɪ̀dɛt)	

A verbal root may be simple or complex, as with the intensitive form:

-bwaŋ	'to break (transitive)'
-bwaŋ-a-bwaŋ	'to crush'

(A vowel is inserted in order to break up consonant clusters that are not allowed in Turkana.)

Each verbal root has basic morpho-syntactic features associated with it. It is either a stative verb root, a process verb root, or an action verb root. These distinctions cut across morphological classes. Stative verb roots are distinguished from process verb roots, inter alia, in that the former do not allow an imperative form. Process verb roots are distinguished from action verb roots, inter alia, in that the former take a durative aspect marker, whereas the latter take a punctual aspect marker. Examples:

Class 1		Class 2	
Stative verbs			
-dwar	'be bitter'	-ɪ̀bʊs$^{\text{ɪ̀}}$	'be beautiful'
••to-dwar	'be bitter!'		
Process verbs			
-cam	'love'	-ɪ̀ŋɪt	'ask'
à-cam-ɪt I-love-Asp/dur.	'I love'		
Action verbs			
-ɲam	'eat'	-ɪ̀dɛt	'beat'
à-ɲam-ɪ̀ I-eat-Asp/punct.	'I am eating'		

A verbal root may be expanded by way of derivational suffixes. Turkana uses the following derivational extensions: ventive, itive[2], dative and instrumental (the latter in a remnant form). They are used with process verbs and action verbs without affecting the basic morpho-syntactic features of these verbs. When they are used with stative verbs, the basic morpho-syntactic features of the latter are affected.

In the following, derivation will first be discussed with process verbs and action verbs (section 3). Subsequently, it will be shown how the derivational extensions may be used in order to change verbs into process verbs (section 4).

3. DERIVATION

3.1 INTRODUCTION

The derivational extensions manifest themselves in different forms depending on aspect (imperfective versus perfective) or mood (indicative versus imperative and others), as well as on the vowel quality of the root vowel. The various forms are summarized in table 1.

Table 1: *Turkana verb extensions*

		verb root	ventive	itive	dative
Infinitive forms		+ATR	+ùn^{i}	+òr^{i}	+kìn^{i}
		-ATR	+ʊ̀n^{ɪ}	+àr^{ɪ}	+kɪ̀n^{ɪ}
Indicative	Imperf.	+ATR	+ùn	+òr	+kìn
		-ATR	+ʊ̀n	+àr	+kɪ̀n
	Perf.	+ATR	+^{ù}	+ò	+k^{ì}
		-ATR	+$^{ʊ̀}$	+à	+k$^{ɪ̀}$

The perfective forms are also used with other than indicative mood, e.g. with the imperative.[3]

With regard to the derivational process itself, two specific problems may be pointed out:

(a) A derived stem may have lost the root on which it was based:

a-ɲo+ùn^{i} 'to stand up' (infinitive form with ventive extension)

(The prefix a- is a female gender prefix used with infinitive verb forms.) For reasons of syntactic and phonological behaviour, however, they may still be treated as derived forms.

(b) The semantic contribution of an extension is hard to define, as it is not uncommon with derivational processes in general. Compare the two verbs with ventive extension:

a-boŋ+ùn^{i}	'to return here'	(root: **-boŋ** 'return')
a-tam+ʊ̀n^{ɪ}	'to remember'	(root: **-tam** 'think')

3.2 MORPHOPHONEMIC RULES

3.2.1 Vowel Harmony

The nine vowels in Turkana belong to either of two harmony sets distinguished by a feature "advanced tongue root (ATR)": **i, e, o, u** (all [+ATR]) and **ɪ, ɛ, a, ɔ, ʊ,** (all [-ATR]).

The vowel quality of the derivational suffixes depends on the advanced tongue root feature of the preceding verb root (see table 1 above). (For a description of the mechanism involved in the production of these vowels, see e.g. Stewart 1967 and Jacobson 1978.)

3.2.2 *Tone*

Turkana has two basic tone levels: high and low. Low tones on verbal suffixes are raised to high when they occur in non-final position:

a-ɲam+ʊ̀n-à →	[áɲámʊ́nà]	'to be worn out, to be eaten up'

3.2.3 *Infinitive versus Conjugated Form*

Turkana and other Nilotic languages use different allomorphs for each derivational extension depending on mood and aspect (as noted above). With perfective aspect marking in the indicative, as well as with all non-indicative verb forms (imperative, narrative etc.), the final consonant of the derivational extensions are deleted. Some examples:

à-dɔk+ʊ̀n-ɪ̀ I-climb-Ventive-Asp	'I am climbing up this way'	(indic. mood with imperf. aspect)
à-dɔk+$^{\text{ʊ̀}}$ I-climb-Ventive	'I have climbed up this way'	(indic. mood with perf. aspect)
tɔ-dɔk+$^{\text{ʊ̀}}$	'climb up!' (singular)	(imperative)

When the derived perfective forms occur in the passive (indicated by means of a non-voiced high front vowel), the final consonants of the extensions show up again:

à-dà+ʊn-$^{\text{ɪ̀}}$	'it is finished'

One may, therefore, claim that the deletion of the final consonant is a synchronic rule of Turkana. However, when the imperative form is used in the plural (thereby adding a suffix -tV), the final consonants of the extensions do not show up. The deletion rule, thus, is restricted to specific grammatical environments and is not (or: is no longer) a matter of word-final position.

In the infinitive the full forms of the derivational extensions are followed by a high front vowel, which has no separate function at the synchronic level. This vowel should be distinguished from the reflexive marker, which has low tone and thereby raises the tone of the preceding suffix:

akɪ-ɪ̀lɔt+àr$^{\text{ɪ}}$	'to wash somebody'
akɪ-ɪ̀lɔt+àr-$^{\text{ɪ̀}}$	'to wash oneself'

One possible origin for the high front vowel may be analogy with other verb forms, e.g. infinitives.

3.3 THE DERIVATIONAL SUFFIXES

3.3.1 The Ventive and Itive

The ventive/itive extensions are deictic elements often indicating motion towards/away from the speaker. Thus **a-dɔk+ʊ̀n**$^{\mathrm{I}}$ may mean 'to climb up' or 'to go down', depending on the position of the speaker. Compare the imperative forms:

tɔ-dɔk+à	'go down!' (if the person commanding is on top of a hill)
	'climb up!' (if the person commanding is at the foot of that hill)
tɔ-dɔk+$^{\grave{ʊ}}$	'come down!' (if the person commanding is at the foot of that hill)
	'climb up!' (if the person commanding is on top of that hill)

The itive extension has an additional meaning, that of indicating totality or completion of an action; it is, therefore, often used with the pluperfect in Turkana:

à-tò-ryam-$^{\grave{ʊ}}$ a-kiriŋ k-e-pe-y+òr-$^{\mathrm{i}}$ 'I found that all the meat had been roasted'
I-found meat that-it-roast-Itive-Passive

(Root: -pe 'roast'; the consonant y is due to glide formation.)

3.3.2 The Dative

The dative usually indicates a process or action directed towards or for somebody or something; the latter entities function as indirect objects in Turkana.

Although the dative extension is always preceded by either a high front vowel or **o** or **a**, there are a number of reasons for analysing these vowels as not being part of the dative. One reason is that this vowel stays when the suffix is replaced:

akɪ-ìŋɔl-ɪ́+kɪ̀n$^{\mathrm{I}}$	'to look at somebody or something'
akɪ-ìŋɔl-ɪ+ʊ̀n$^{\mathrm{I}}$	'to look by turning the head'

(The corresponding simple root is not used.)

Further evidence for the separate status of these vowels is given in section 5 below.

3.3.3 Remnants of an Instrumental

There are at least two indications from the language itself that there was an instrumental verbal extension at one stage:

(a) A verb form in adverbial clauses expressing some purpose is different depending on whether the deleted noun is direct object or instrument:

nakì a-yɛ̀pɛ , à-tò-yɛp-ìà ɛ-kɪtɔ-ɪ 'give me an axe to cut a tree with'
give axe I-cut-with tree

nakì ŋa-kipì, à-tɔ̀-mat-Ø 'give me water to drink'
give water I-drink

uch a distinction does not occur in main clauses with an instrumental complement versus a direct object.

(b) Verb infinitives in complement phrases may take a suffix -òrè or -àrè (depending on the root vowel). The resulting verb forms indicate that some sort of instrument or purpose is implied:

à-sak-ì a-pe-y-òrè 'I want to do a special roasting'
I-want-Aspect to-roast-Instr.

(Root: -pe 'roast'; the suffix òrè indicates that the roasting is done in a specific way for a certain ceremony.)

Although the above-mentioned markers syntactically function as instrumental markers, they are not cognate with the instrumental suffixes in e.g. Southern Nilotic languages. This suggests that the instrumental suffixes were lost, whereas the syntactic feature "instrumental" was retained but expressed by way of different markers. Their origin remains to be investigated. At the present stage, these "replacement markers" are retained only in dependent clauses. Thus, although no clear instrumental suffix is detectable, at one stage of the language there must have been an instrumental extension also expressed on verb forms in main clauses (see section 6).

3.4 ON THE STATUS OF THE STATIVE

The stative (or neutro-reflexive) marker indicates entrance into a spe state of being without an agent being implied. It differs from the passiv that with stative forms no agent is implied. The suffix is -o after [+AT vowels and -a after [-ATR] root vowels:

aki-ìtem-ò 'to try oneself' (root: -ìtem 'try')
a-bwaŋ-à 'to break (intr.)' (root: -bwaŋ 'break (tr.)'

Contrary to the ventive, itive and dative, it necessarily changes tactic function of a verb (from process or action into stative). It analysed as an aspect marker, not as a derivational extension.

3.5 Co

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OMPOUND DERIVATION

If the stative marker is analysed as an inflectional rather than as a der-
ional extension, compound derivation does not occur in Turkana, since the
possible combination is either ventive, itive, or dative with a stative
ker following. Combinations of ventive plus dative, or treble compounds are
t allowed in Turkana.

Combinations of derivational suffixes plus stative are used in order to
ocus on the completion of the action or process. Example:

è-pet+òr-ò it-beat-Itive-Stative	'it is weaned'

4. EXTENDED FUNCTION OF DERIVATIONAL SUFFIXES

4.1 INTRODUCTION

The basic syntactic features of a verbal root may be altered, i.e. proce
verbs may become stative verbs, or action verbs may become process verbs, et
In changing a stative verb into a process verb, derivational extensions are
volved. Thus, these formatives have an additional and derived function, t
forming inchoatives and affective verb forms, as will be illustrated belo

4.2 THE INCHOATIVE

When stative verbs become process verbs, e.g. from 'be good' to 'b
good', the (deictic) extensions ventive and itive are used. When thes
ive verbs are used in the infinitive, the ventive extension is added.
the dative above, with this type of construction vowels show up prece
ventive and itive extensions that do not form part of these extensio
are they part of the root. These so-called epipatetic vowels are d
more detail in section 5. Examples:

Root plus epipatetic vowel		*Inchoative (infinitiv*	
-bob-$^{\grave{o}}$	'sweet'	a-bob-ò+ùn^{i}	'to bec
-dɪt-$^{\grave{\varepsilon}}$	'small'	a-dɪt-ὲ+ʊ̀n$^{\mathrm{I}}$	'to bec
-dwar	'bitter'	a-dwar+ʊ̀n$^{\mathrm{I}}$	'to be

When these verbs are conjugated, the ventive extension is used
an epipatetic vowel **o**, **a**, or **ε**, whereas the itive is used in a
ments. Inchoative forms with a ventive extension are conjuga
verbs; those with an itive extension are conjugated as reflex

that with the latter forms, a regular vowel contraction rule occurs.).
Examples:

à-pol-ò+ùn- it → [àpólóúnìt] 'I am growing, becoming big'
ɛ̀-dɪt-ɛ̀+ʊ̀n-ɪt → [ɛ̀dɪ̀tɛ́ʊ́nɪ̀t] 'it becomes small'
ɛ̀-dwar-ɪ̀+ar → [ɛ̀dwàrɛ́r] 'it becomes bitter'

4.3 THE AFFECTIVE

When being in a specific state affects somebody or something, this is expressed by adding the dative extension in Turkana. The form is based on the root plus epipatetic vowel, followed by dative extension:

a-bob-ɔ̀+kìn^{i} 'to be sweet to somebody' (root: **-bob-** 'be sweet')

These verb forms are treated as process verbs when conjugated with regard to aspect marking. Turkana uses the same extension in order to indicate subjectively experienced quality:

ɛ̀-rɛŋ-ɪ̀+kɪ̀n-ɪt → [ɛ̀rɛ̀ŋɪ́kɪ́nɪ̀t] 'it is reddish (i.e. red to somebody)'

5. INTERNAL RECONSTRUCTION OF SOME VERBAL ASPECTS: EPIPATETIC VOWELS

The claim that the epipatetic vowels showing up with datives, inchoatives, and affective verb forms are not part of the extensions will be elaborated next. Several indications suggest that their synchronic function is to associate the root with these verbal extensions, whereas historically they marked transitive versus reflexive verb forms.

The following epipatetic vowels are found with action verbs and process verbs (with dative extension):

(a) i or ɪ: a-sɪl-ɪ+kɪn^{I} 'to be lonely'
All verbs with a dative extension preceded by a high vowel have lost their corresponding simple root in Turkana, but the extensions may be replaced (see section 3.3.2).

(b) o or a: a-sʊb-a+kɪ̀n^{I} 'to do for somebody' (root: -sʊb 'do')

Thus, if one wants to use the dative extension with action and process verbs, the epipatetic vowel o or a should be used.

Stative verb roots are of two basic forms: those ending in a consonant and those ending in an non-voiced high front vowel. The root form is used with (e.g.) the imperfective:

è-pot$^{\grave{i}}$	'it is heavy, pregnant'	ɛ̀-dɪt	'it is small
è-dwar	'it is bitter'	è-bob	'it is sweet

When those ending in a consonant are extended, as with fective, or with the nominalized forms, vowels show up that otherwise. Examples with nominalized forms:

a-bob-ò+$^{\grave{u}}$	'sweetness'	e-kidit-e+$^{\grave{u}}$
a-pot-$^{\grave{i}}$+s^{i}	'heaviness,pregnancy'	a-dwar-$^{\grave{\text{ɪ}}}$+s$^{\text{ɪ}}$

The most probable explanation is that the non-high vowe they were devoiced in word-final position; they were retaine word-final position. This fits in with observations made ir that non-high vowels tend to be lost earlier than high vowel voiced. Examples without a high front vowel in the imperfec epipatetic vowel in complex forms, as with the root -dwar ab best explained as analogy formations (with those verbal root pletive corresponding forms like -pot$^{\grave{i}}$).

Now the situation with process verbs and action verbs can also be explained. With the dative, the same epipatetic however, since verbs with an epipatetic high front vowel plu their corresponding root, and since no simple action verb or with a final non-voiced high front vowel, there is no reason simple action verbs or process verbs should be set up with a patetic vowel in their underlying representation.

As noted above, the various epipatetic vowels are in co bution. Dative constructions preceded by a or o very often a whereas those preceded by ɪ or i often are intransitive or Furthermore, when inchoative verb forms are conjugated, thos patetic vowel a, o, or ɛ are conjugated as transitive verbs a high front vowel are conjugated as reflexive verbs. This patetic vowels in Turkana, now showing up only in complex ve stage marked transitive verb forms (those with a or o) and (ɪ or i). For the status of ɛ, see below.

This hypothesis is confirmed by synchronic data from W guages, e.g. Achooli (Crazzolara 1938:106):

nèk+ò	'to kill somebody'
nèk+ɛ̂	'to kill oneself, cr: each other'

Verbs with -ɪ̂ are rare in Achooli, but they also indicate reflexivity or reciprocality. After the original function disappeared in early Turkana or before, the forms with epipatetic vowel ɛ probably were conjugated as transitive verbs for phonological reasons (i.e. for conditions on possible sequences of vowels).

Since these epipatetic vowels are found in all branches of Nilotic in a remnant or still functional form, it may be assumed that their common ancestor (proto-Nilotic) distinguished transitive and reflexive verbs in the following way:

root plus •/A/	(transitive verbs),
root plus •/I/ or •/ɛ/	(reflexive verbs).

6. SOME COMPARATIVE NOTES

6.1 INTRODUCTION

With regard to the comparative status of the derivational extensions, three specific points will be investigated:

(a) the form and function of simple derivation in other Nilotic languages;
(b) the form and function of compound derivation in these languages;
(c) the possibilities for an extension of their function.

Since only a few Nilotic languages have been taken for comparison, the discussion below is somewhat sketchy and tentative; nevertheless, a few conclusions can probably be drawn for Turkana and Nilotic in general.

6.2 SIMPLE DERIVATION

Within Eastern Nilotic, a clear description of verbal derivation is to be found in Tucker and Mpaayei (1955:120-48). From the discussion, the following suffixes can be adapted:

+ATR roots	*-ATR roots*	
+u(n)	**+ʊ(n)**	Ventive
+o(r)	**+a(r)**	Itive
+ki(n)	**+kɪ(n)**	Dative
+ye/C __	**+ye/C __**	Instrumental
+ɲe/V __	**+ɲe/V __**	

The final consonants of these extensions show up only with imperfective aspect

when followed by affixes with a different vowel; elsewhe
is deleted. With the perfective forms, all final conson

In Western Nilotic derivational concepts like venti
indicated through internal vowel change in the verb (Abl
nant of earlier suffixation. (Nuer seems to have retain
Dative and instrumental do not seem to be indicated on t
able are somewhat inconclusive.

Clear cognates are found in the third branch of Nil
e.g. in Sebei (O'Brien and Cuypers 1975:70-73). The mo
function.

+(n)u	Ventive
+t(o)	Itive
+ci(ni)	Dative
+en/C__V; +e/C__##; +ne/V__##	Instrumental

The vowels and consonants between parentheses above sho
tive verb forms in Sebei.

From this short comparison, one may conclude that
the languages discussed above, proto-Nilotic, had verba
itive, dative, and instrumental. If such distantly re
na, Maasai, and Sebei have different allomorphs for im
aspect, their common ancestor, proto-Nilotic, probably
imperfective and perfective aspect on derivational ext
it is highly uncommon for languages to express aspectu
bination with derivational extensions. The following
up for proto-Nilotic:

Imperfective	*Perfective*	
*+Un (or: *nU)	*+U	Ver
*+tA (or: *+At)	*+t	Iti
*+kIn	*+kI	Dat
*+EN (or: *NE)	*+E	Ins

With regard to the starred forms, the following s
structed forms are not based on regular sound corresp
what seems to have been the most likely proto-form (e
*t>r as in Eastern Nilotic languages.)

In all languages investigated for this purpose t
also used with e.g. the imperative, thus proto-Niloti

It is possible that the deletion rule occurred by analogy with a rule for aspect markers whereby final consonants were deleted in order to distinguish perfective from imperfective; this suggestion, however, needs further elaboration.

6.3 COMPOUND DERIVATION

Tucker and Bryan (1966:452) claim that in Eastern and Southern Nilotic (together called "Para-Nilotic" in their terminology) "derivative suffixes are capable of endless combinations". However, in Eastern Nilotic there seem to be strong restrictions. In e.g. Maasai, with double compounding the second extension always seems to be stative (compare section 3.4 for Turkana above). Furthermore, instrumental plus dative seem to be possible in the passive (Tucker and Mpaayei 1955:143). With triple compounding, the second extension is a stative marker, whereas the third extension is an instrumental.

Southern Nilotic languages seem to have more freedom with regard to compounding processes (Toweett 1979:143-44), e.g. a ventive may be followed by a dative extension. Unfortunately, no general description of restrictions on compounding is available for Southern Nilotic.

Probably because of the loss of the instrumental suffix in Turkana (at least in main clauses), a decrease occurred in combinatory possibilities for verbal extensions. As a compensation, Turkana developed new syntactic means (i.e. without verbal markers) of expressing complex relations of e.g. performing an action for somebody with the help of some instrument (i.e. dative plus instrumental):

Turkana:

à-duŋ-ò+kìn-ì à ɛ̀-kɪ´lɛŋ 'I cut it (for somebody) with a knife'
I-cut-for-Asp with knife

Maasai (adapted from Tucker and Mpaayei 1955:156):

a-duŋ-o+kin+yè ɛ̀n̲-ka̲lem 'I cut it (for somebody) with a knife'
I-cut-for-with knife

Whether the situation in proto-Nilotic was as it is in Southern Nilotic synchronically, or as in Maasai (Eastern Nilotic), is still to be investigated. It can, nevertheless, be stated with a fair amount of certainty that compound derivation existed in proto-Nilotic.

6.4 EXTENDED FUNCTION OF DERIVATIONAL FORMATIVES

The extended function of the derivational extensions as inchoative markers

(ventive and itive) or as affective (dative) seems to be restri
of Eastern Nilotic languages.

The extended function as inchoative marker within Eastern
occur in the Bari group. In Maasai the ventive marker is used
choatives with future or present tense (with past tense, the st
used; Tucker and Mpaayei 1955:141):

a-rok-ù 'I become, shall become black' (root: -r

This functional extension probably occurred as an innovati
Nilotic after the Bari group had split off; it seems to be a ra
tension in the languages of the world (Givón 1973:918). Proto-
used the suffix **-ɪt** in order to indicate inchoatives; many South
guages still use the suffix to indicate inchoative. In Turkana
become a durative marker; such a functional shift is also very
languages (Kuryłowicz 1964).

The extended function of the dative (as an affective) seem
recent innovation of Turkana and its closest relatives Karimojo
Nyangatom; whether it occurs in Teso is not known. In order to
innovation, another verbal aspect, that of the contained pronom
should be outlined first.

Southern and Eastern Nilotic languages other than those me
preceding paragraph have a precise way of indicating which pers
the subject, object, or indirect object by way of formatives pr
verbal root. These possibilities have been reduced in the abov
guages. Probably as a compensation (i.e. in order to keep the
indicating syntactic functions on the verb), the dative was als
ive verbs (which were then marked as process verbs). Compare:

Maasai (Tucker and Mpaayei 1955:84; example without tone m

a-a-muei εn-kɪtʊ 'my cow is sick (i.e. sick as
it-me-sick cow

Trukana:

k-ɛ̀-rɔn-ɪ̀+kɪ̀n-ɪt a-yɔŋ a-ɪ̀tɛ̀ 'the/my cow is bad to me'
it-bad-Dat-Asp me cow

The formative -k (in Turkana) indicates only that the dire
direct object is not a third person (singular or plural).

7. CONCLUSION

The derivational extensions ventive, itive, dative, and instrumental (the latter in a remnant form) in Turkana are retentions from a historical stage possibly predating proto-Nilotic. A comparison with other Nilotic languages suggests that with simple derivation the function of the extensions in Turkana is characteristic for Nilotic in general as well as for proto-Nilotic. With regard to compounding, a decrease has occurred in combinatory possibilities, whereas the extended function of the suffixes was an innovation of Turkana and a few other languages.

Internal and comparative evidence, furthermore, showed that the allomorphic variation for extensions in Turkana, based on an explicit distinction between perfective and imperfective aspect on the verb itself, is an old feature as well, probably already existing in proto-Nilotic.

The epipatetic vowels showing up in the environment of some extensions probably marked transitive and reflexive verbs in proto-Nilotic.

NOTES

* Fieldwork on Turkana (northwest Kenya) was conducted during two periods of fieldwork; from August 1978 till March 1979, and from November 1979 till April 1980. I would like to thank the Netherlands Foundation for the Advancement of Tropical Research (WOTRO) for providing me with Grant W 39-52 in order to conduct the research.

1. Notes on conventions:

- : stem-boundary
+ : morpheme-boundary
: position before pause
[ ] : systematic phonetic transcription
* : reconstructed form
** : ungrammatical form
´ : high tone phonetically
` : low tone phonetically

Vowel symbols raised somewhat above the line indicate non-voiced vowels. Although the de-voicing of the high vowels (as with the ventive and dative in the perfective) is predictable here (position before pause of high vowels with polar tone), non-voiced vowels are not always so. For a discussion of non-voiced vowels in Turkana and other languages of the area, see Dimmendaal 1980.

2. "Itive" (from Latin **itum** 'gone') refers to motion away from the speaker and is used rather than "Andative" (from Italian **andare** 'to go').

3. Where underlying and surface forms deviate considerably, both are given without further justification. A more detailed description of phonology and other aspects of Turkana is in preparation.

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The Morphophonemics of the Maasai Verb

1. INTRODUCTION

Tucker & Mpaayei's *A Maasai Grammar* has the distinction of being the first complete grammar of any Nilotic language, containing as it does a detailed statement of the phonology, including tonology, the morphology, and the syntax of the language. All of the data presented in this study are drawn directly from Tucker & Mpaayei, and this paper is simply an essay in formal restatement. In the 25 years and more which have elapsed since *A Maasai Grammar* was written the devices of linguistic analysis have become more succinct and linguistic theory itself has become both more formal and more formalized. The questions asked by the theory have become more elaborate and the resulting answers, we hope, have become more revealing. Obviously, Professor Tucker did not write a modern generative phonology in 1955; however, one of the highest compliments that one can pay a book which has stood the test of a quarter century is that it contains all of the information that one needs for a rigorous formal statement.

2. THE GENERATION OF THE MAASAI VERBAL COMPLEX

The Maasai verbal complex may be generated by the following rule:

$$\mathrm{V} \rightarrow \left\{\begin{array}{l} \text{Cl. II Prefix}^{d} \\ (\mathrm{CAUS}^{a})\left(\left\{\begin{array}{l}\mathrm{PAST}\\ \mathrm{IMP}^{c}\\ \mathrm{SUBJ}\end{array}\right\}\right) \end{array}\right\} (\text{redup})\ \mathrm{BASE}\ \left(\left\{\begin{array}{l}\text{MOT TO}\\ \text{MOT AW}\\ \mathrm{BENEF}\\ \mathrm{CONT}^{a}\end{array}\right\}\right)\left(\left\{\begin{array}{l}\mathrm{INTRA}\\ \mathrm{NEUT}^{b}\\ \mathrm{INCEP}\\ \mathrm{CAUS}^{d}\end{array}\right\}\right)\left(\left\{\begin{array}{l}\mathrm{PAST}\\ \mathrm{IMP}^{c}\\ \mathrm{SUBJ}\\ \mathrm{FUT}\end{array}\right\}\right)(\mathrm{INSTR}^{b})(\mathrm{PASS}^{b,c})$$

(a) If CONT is chosen, then only the CAUS prefix also may be chosen.

(b) If NEUT is chosen, then PASS may also be chosen only if INSTR is chosen.

(c) If PASS is chosen, them IMP may not also be chosen.

(d) The CAUS suffix is chosen only if the Cl. II Prefix has also been chosen.

The semantics of the different verbal affixes are outlined in Tucker & Mpaayei (1955) and in Tucker & Bryan (1966). As this study is concerned primarily with the morphophonemic alternations of these affixes I will not here attempt any formal statement of the semantics of the Maasai verbal complex. I will cover only surface segmental phonology.[1]

Maasai verbs can be divided into two morphological classes, as shown below:

(1) Class I Verb BASE → Root → CVC

Class II Verb BASE → Stem → V + Root → /ɪ/ + CVC

The morpho-phonological rules must be sensitive to the morphological class to which the verbal base belongs. For instance, Class II verbs only take the Past Tense suffix and do not take the Past Tense prefix, and in the Causative Class II verbs take a suffix rather than a prefix, and indeed the Causative prefix changes a Class I verb into a Class II verb as shown below:

(2)

	Class I	*Class II*
Past Tense	**a - ta - raɲ - a** 1p.s. PST VB PST 'I sang (it)'	**a - ɪ - rrag - a** 1p.s. Cl.II VB PST 'I lay down'
Causative	**a - ɪta - lam** 1p.s. CAUS VB 'I (shall) cause him to avoid it'	**a - i - lep - ie** 1p.s. Cl.II VB CAUS 'I (shall) raise it'

3. PHONOLOGICAL PROCESSES

There are in Maasai widespread phonological processes which are not specific to the verbal complex. These processes may be summarized as follows. (See Appendix for ordered list of phonological rules.)

Vowel Harmony: Maasai has a ten-vowel system:

[- ATR]		[+ ATR]	
ɪ	ʊ	i	u
ɛ	ɔ	e	o
a		a	

In common with other Eastern Nilotic languages, Maasai exhibits surface Vowel Harmony in that all of the non-low vowels in any given word must be members of either the [-ATR] set or the [+ATR] set, where [+ATR] vowels are dominant and cause [-ATR] vowels to become [+ATR] (cf. Hall et al. 1973/74). As I showed in an earlier study (Wallace 1980), because /a/ is a member of both sets of vowels Maasai Vowel Harmony must be expressed by two rules which I term Non-Low Vowel Harmony and Suffixal Vowel Harmony (hereafter VH and SVH). These two rules are necessary because /a/ undergoes Vowel Harmony only when the triggering [+ATR] morpheme is to its left. Thus /a/ will be affected by Vowel Harmony only when it is a suffix, never when it is the vowel of a base or a prefix. The rules of Non-Low Vowel Harmony and Suffixal Vowel Harmony are:

(3) *VH* (Rule 2): $\begin{bmatrix}V\\-lo\end{bmatrix} \rightarrow [+ATR]/\_\_C_0 + C_0 \begin{bmatrix}V\\+ATR\end{bmatrix}$

A non-low vowel becomes [+ATR] when

same word by a [+ATR] vowel.

SVH (Rule 4): $V \rightarrow [+ATR]/\begin{bmatrix}V\\-lo\\+ATR\end{bmatrix} C_0 + C_0\_\_$

A vowel becomes [+ATR] when it is prec

by a non-low [+ATR] vowel.

Vowel Harmony in Maasai is multi-directional operatin

outwards:

(4) ε- 3p. subject pronoun prefix

dot verb BASE 'to pull'

-ʊ verbal suffix MOT TO

ε + do

$[-lo]\begin{bmatrix}-lo\\+ATR\end{bmatrix}$

VH ↓

[+ATR]

SVH

SURFACE: **edotu** 's/he

Here we find the 3rd person subject pronoun prefix, [-A

verb which means 'to pull' and the [-ATR] {-ʊ} Motion Tow

applies to turn the subject pronoun to [+ATR]. SVH applie

ion Towards suffix to [+ATR].

SVH is followed by a rule of Low Vowel Raising (hereafter

lo], [+ATR] vowel to [-lo]:

LVR (Rule 5): $V \rightarrow [-lo]/\left[\frac{\quad}{+ATR}\right]$

ε- 3 p.

ŋor verb BASE

-aa MOT AW

ε + ŋor + aa

$[-lo]\begin{bmatrix}-lo\\+ATR\end{bmatrix}$

VH ↓

[+ATR]

SVH

LVR [+ATR]

↓

[-lo]

SURFACE: **eŋoroo** 's/he threw (it) (away from

re we have a verb root which means 'to throw', with a [+AT

applies to turn the 3rd person pronoun prefix to [+ATR].

y to change the [+lo] Motion Away suffix to [-lo], [+ATR]

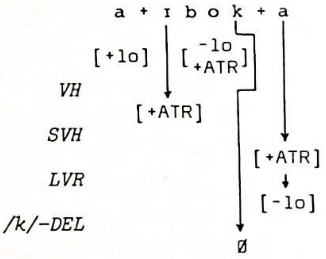
/k/-Deletion: Another widespread phonological process in Maasai is the rule which deletes /k/ when it occurs between non-high back vowels. This is exhibited in:

(6) Class I verb Pres. **a----lak** 'I untie (it)'
Past **a-ta-la▮-a** 'I untied (it)'
Class II verb Pres. **a---ibok** 'I prevent (it)'
Past **a---ibo▮-o** 'I prevented (it)'

This shows the present and the past tense of the Class I verb which means 'to untie', and the Class II verb which is glossed as 'to prevent'. In both cases the stem-final /k/ deletes between identical vowels (when the past tense suffix is added).

SVH and LVR must, as is shown by the form /aiboo/ 'I prevented (it)', precede the rule of /k/ deletion since it is the interaction of these two rules which changes the past tense suffix into an /o/ and thus makes it identical with the root vowel. The derivation involved is:

(7) **a-** 1p. singular subj. pron.
ibok verb BASE 'to prevent'
-a verbal suffix PAST



SURFACE: **aiboo** 'I prevented it'

First VH operates to turn the Class II {ɪ-} prefix to [+ATR]. Then SVH and LVR operate on the Past Tense suffix to yield -/o/. From this we may see that the /k/-Deletion rule will have the shape:

(8) */k/-DEL* (Rule 6):

$$/k/ \rightarrow \emptyset / \begin{bmatrix} V \\ -hi \\ \alpha lo \\ +bk \end{bmatrix} \_\_ + \begin{bmatrix} V \\ -hi \\ \alpha lo \\ +bk \end{bmatrix}$$

A /k/ is deleted between non-high back vowels which are identical.

This rule applies when the gerundive suffix is added, as in (9).

(9) εn- feminine sing. Noun Prefix εn +

lak verb BASE 'to untie' [

-ata deverbative suffix GERUND */k/-DEL*

SURFACE: εla▯a

Note that the vowel which triggers this rule must rule does not apply in (10) where the vowels around th are [-bk], i.e. /ε/.

(10) ɔl- masculine sing. Noun Prefix

dεk verb BASE 'to curse'

-εt deverbative suffix INSTRUMENT SURFACE:

There is a second rule of /k/-Deletion which seems ed with the rule of /k/-Deletion I have just described because it does interact with a rule which causes ATR sult of Vowel Harmony. The rules involved here I shal and /ka/-Shift (MVR and KAS, respectively):

(11) *MVR* (Rule 7):

$$\begin{bmatrix} \text{V} \\ \text{-hi} \\ \text{-lo} \\ \alpha\text{bk} \\ \text{-ATR} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+hi} \\ \alpha\text{bk} \\ \text{+ATR} \end{bmatrix} / \_\_ (/\text{k}/) + [\overset{\text{V}}{\text{+lo}}]$$

A [-ATR] mid-vowel becomes a homorg when followed in the same word by a

KAS (Rule 8):

$$\underset{1}{\text{k}} + \underset{2}{\text{a}} \underset{3}{} \rightarrow \underset{1}{\emptyset} + \underset{2}{\text{aa}} \underset{3}{} / \{\text{i,u}\}\_\_$$

A stem-final /k/ is deleted and a lengthened when they are preceded same word.

Examples of this are:

(12) 'curse'	Pres.	a----dεk	a----dε	'sh
	Past	a-tε-di▯-aa*	a-tε-di-a*	
'intercept'	Pres.	a----lɔk	a----lɔ	's
	Past	a-tɔ-lu▯-aa*	a-tɔ-lu-a*	

*cf. (13) -

That is, MVR causes [-ATR] mid-vowels to become preserving the feature of [αbk]) in the environment vowel. This rule, although resulting in surface [+A dered much later than VH, SVH and LVR because none of these rules apply. KAS This is clearly a causes a root-final /k/ to delete after the operation of MVR. This is clearly a different rule of /k/-deletion than the one discussed above because on the one hand it requires non-identity of the conditioning vowels and on the other hand is ordered much later in the derivation.

4. MORPHO-PHONEMIC ALTERNATIONS IN THE VERBAL COMPLEX

The Past Tense: The past tense of Class I verbs in Maasai is doubly marked - it takes both a suffix {-a} which, as I have shown already, is subject to SVH and LVR, and in addition a prefix {ta-}. This prefix itself is subject to two assimilation rules. The first rule, which applies before VH, is a rule which I term Vowel Assimiliation (VA).

(13) *VA* (Rule 1): $\begin{bmatrix}\text{V}\\ \text{+lo}\end{bmatrix} \rightarrow \begin{bmatrix}\text{-lo}\\ \langle\text{+hi}\rangle\end{bmatrix} / \text{t}\_\_ + C_0 \begin{bmatrix}\text{V}\\ \text{+hi}\\ \langle\text{+bk}\rangle\end{bmatrix}$

The low vowel in this prefix becomes a non-low vowel when the stem vowel is a high vowel; and becomes a high vowel when the stem vowel is a high, back vowel.

(14) a + ta + bul + a → atubula 'I prospered'
1p.s. PST VB PST

Here we have a high back vowel in the verb stem. The past tense prefix vowel assimilates to give the surface form shown. The other rule, which applies after VH, I shall term [-ATR] Vowel Assimiliation (hereafter [-ATR] VA).

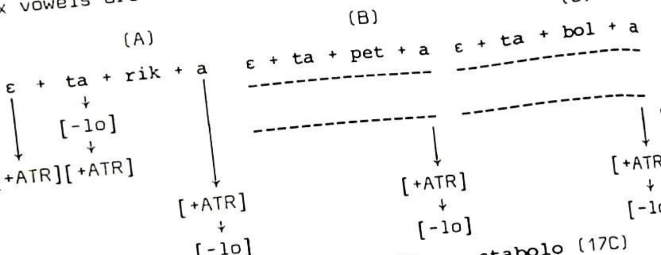
(15) [*-ATR*] *VA* (Rule 3): $\begin{bmatrix}\text{V}\\ \text{-ATR}\end{bmatrix} \rightarrow \begin{bmatrix}\alpha\text{hi}\\ \beta\text{lo}\\ \gamma\text{bk}\\ \delta\text{rd}\end{bmatrix} / \text{t}\_\_ + C_0 \begin{bmatrix}\text{V}\\ \alpha\text{hi}\\ \beta\text{lo}\\ \gamma\text{bk}\\ \delta\text{rd}\end{bmatrix}$

The low vowel in this prefix assimilates to [-ATR] vowels in the verb stem.

(16) a + ta + pɛt + a → atɛpɛta 'I kept close to (it)'
1p.s. PST VB PST

In (17) the interaction of these rules is shown with [+ATR] vowel containing verb stems. In (17A) VA applies to change the past tense prefix vowel to [-lo]. Then VH applies to change the prefix vowels to [+ATR]. SVH and LVR apply to change the /a/ of the past tense suffix to a [+ATR], [-lo] vowel. In (17B) and (17C) VA does not apply since the stem vowel in each case is not [+hi]. VH applies to [-lo] vowels only. As the {ta-} prefix vowel here has not changed

SVH and LVR apply
-lo] vowel the rule of VH is not fed. SVH and LVR apply
VA applies to change the past tense prefix vowel to [+hi
both [+hi] and [+bk] thus creating the structural descri
x vowels are changed to [+ATR] and SVH and LVR apply.



etoriko (17A) 'a/he led him'

ɛtapeto (17B) 's/he smeared it'

ɛtabolo (17C) 's/he opened it'

Class II verbs, as shown in section 2, do not take th
ut do take the past tense suffix which is subject then to
ending on the base vowel, and any following suffixes.

The Simple Passive: This is formed by adding [-ATR] {-ɪ}
This assimilates to [+ATR] when added to a verb stem with

(18) ε- 3p.
ipot verb STEM 'to call'
-ɪ verbal suffix PASSIVE

VH ε + ɪ → [+ATR][+AT
SVH

SURFACE: **eipoti** 's/

VH applies to change the prefixes to [+ATR]. SVH
fix to [+ATR] /i/. Since the passive is a suffix the
ses apply to all verbs, both Class I and Class II.

The Simple Intransitive: This is formed by adding [-
stem. As with other affixes with underlying [-ATR] v
suffix is subject to VH.

(19) ε- 3p.
ŋor verb BASE 'to spear'
-ɪcɔ verbal suffix INTRA

/c/ → [+cont]/{V,

SURFACE: eŋorisho 's/he spears things'
's/he is good at spearing'

First VH operates on the prefix. Then SVH operates on the suffix vowels. Then /c/ → [ʃ] in the environment of a preceding vowel or word boundary.

The Subjunctive/Imperative: Maasai has two irrealis moods which Tucker & Mpaayei have termed Subjunctive A and Subjunctive B. Since Subjunctive A differs from the present tense only in tone, I will not discuss it here. I am interested in Subjunctive B which also functions as the imperative. Morphologically the imperative poses a certain number of problems. Its basic formation - in Class I verbs - is to prefix {ta-} and suffix {-a}, both of which are subject to the phonological rules which apply to the past tense affixes. Class II verbs, of course, take only the suffix and not the prefix. In addition, this subjunctive/imperative requires in 1st and 3rd person a prefix {ma-} apparently not found in second person. However, in 2nd person plural one finds /εn-/. This can be accounted for by the following derivation:

(20)	Class I				Class II			
	ma +	ɪ +	ta +	CVC	ma +	ɪ +	ɪ +	CVC
	SUBJ	2p	SUBJ	VB	SUBJ	2p	Cl.II	VB
					ma +		ɪ	+ CVC
Glide Formation	may		ta	CVC	may			CVC
Monophthongization	mε		ta	CVC	mε			CVC
Metathesis	εm		ta	CVC	εm			CVC
Nasal Assimilation	εn		ta	CVC				

The rule of nasal assimilation which I have assumed here, is a rule which is needed to account for the feminine gender prefix anyway. The only rule in this derivation not independently motivated is the metathesis which I am postulating. The subjunctive/imperative paradigm is:[5]

(21)				
	m-a-ta-raɲ-a	'so that I sing'	m-a-ɪrrag̣-a	'so that I lie down'
	ta-raɲ-a	'so that you sing'	ɪrrag-a	'so that you lie down'
	m-ε-ta-raɲ-a	'so that he sings'	m-e-ɪrrag̣-a	'so that he lies down'
	m-a-ta-raɲ	'so that we sing'	m-a-ɪrrag-a	'so that we lie down'
	εn---ta-raɲ	'so that you sing'	ε--- rrag̣-a	'so that you lie down'
	m-ε-ta-raɲ-a	'so that they sing'	m-e-ɪrrag̣-a	'so that they lie down'

(The second person forms may also be glossed as 'Sing!' and 'Lie down!', respectively.) I cannot at present explain why it is the second person singular of this form. It may event count for this form on comparative grounds.

5. COMPLEX DERIVATION

The simple verbal derivational morphemes as they first person present active tense are:

(22) MOTION TOWARDS	a-ɪ -ŋɔr -ʊ	'I come looking f
MOTION AWAY	a-ɪ -rrag-aa	'I sleep there on
DATIVE	a-ɪ -sʊj -akɪ	'I wash it for hi
CONTINUATIVE	a-ɪ -rrag̡-ɪta	'I am lying down'
INTRANSITIVE	a-ɪ -sʊj -ɪcɔ	'I wash, do washi
NEUTER	a-ɪ -sʊj -a	'I am washed, I wa
INCEPTIVE	a-----pir -u	'I become fat'
CAUSATIVE Cl.II	a-ɪ -rrag̡-ie	'I (shall) cause
CAUSATIVE Cl.I	a-ɪta-lam	'I (shall) cause
INSTRUMENTAL	a-----duŋ-ie	'I cut him with it
PASSIVE	aa-----rɪk-ɪ	'I am/or shall be

Where the morpho-phonemics of Maasai really become nological interaction between these suffixes, which as above can co-occur. In (23) I show the surface realiza rivative affixes which occurs closest to the base; that BENEF, as they co-occur with the NEUT and the INSTR suf and the passive voices, subjunctive, present and past t tone because many generalizations would be missed witho means exhausts the co-occurrence possibilities it is su the complexity of the phonological interaction.

A number of points must be specified. To begin wi which I discussed in (7) does not maintain a simple pho ing as /-a/, /-ye/, and /-e/. In the same way, the MOT phemes surface either with or without a final /-n/, and faces as /-aa/, /-aya/[7], /-ay/, and /-ar/. While I hav ly define the underlying forms of these morphemes and t alternation I am here attempting to approach a more exp morphemes rather than a simple listing of their morpho-

The simplest to account for are the MOT TO and the

(23) (The parenthesized numbers at the bottom of the table refer to the following morpheme slots: (1) NEUTER; (2) PAST/IMPERATIVE/SUBJUNCTIVE; (3) INSTRUMENTAL; (4) PASSIVE.)

	MOTION TOWARDS {-ún}	*MOTION AWAY* {-ara}	*DATIVE-BENEFACTIVE* {-akɪn}
SIMPLE			
Present	á----dót á----dót-ú▯	á----ŋór á----ŋór-ó▯ò	á----ból á----ból-ókì▯
Past	á-tá-dót------- ò á-tá-dót-u̍▯---- o̍	á-tá-ŋór-------- ò á-tá-ŋór-óy▯---- yè	á-tá-ból--------- ò á-tá-ból-ók▯▯---- o̍
plural	kí-ta̍-do̍t------- ô kí-ta̍-do̍t-u̍▯----twô	kí-ta̍-ŋo̍r-------- ô kí-ta̍-ŋo̍r-o̍y▯----tyê	kí-ta̍-bo̍l--------- 8 kí-ta̍-bo̍l-o̍ki̍▯---- tô
Imper.	tá-dòt------- ò tá-do̍t-ú▯	tá-ŋòr-------- ò tá-ŋo̍r-óy▯	tá-bòl--------- ò tá-bo̍l-o̍kí▯
NEUTER			
Present	á----dót---- ò á----dót-ún-yè	á----ŋór----- ò á----ŋór-ór▯- ì	á----ból------ ò á----ból-ókín- o̍
Past	á-tá-dót---- - è á-tá-dót-ún- - yè	á-tá-ŋór----- - è á-tá-ŋór-ór▯- - ì	á-tá-ból------ - è á-tá-ból-ókín- - è
plural	kí-ta̍-do̍t---- ó- tè kí-ta̍-do̍t-u̍n- - yê	kí-ta̍-ŋo̍r----- ó- tè kí-ta̍-ŋo̍r-o̍r▯- - î	kí-ta̍-bo̍l------ ó- tè kí-ta̍-bo̍l-o̍ki̍n- ó- tè
APPLIED			
Present	á----dót-----------yé á----dót-ún---------yè	á----ŋór-------------yé á----ŋór-ór▯---------ye̍	á----ból-------------yé á----ból-ókín---------yè
Past	á-tá-dót------- yè á-tá-dót-u̍n---- yé	á-tá-ŋór--------- yè á-tá-ŋór-o̍r▯---- yé	á-tá-ból---------- yè á-tá-ból-óki̍n---- yé
plural	kí-ta̍-do̍t------- yê kí-ta̍-do̍t-u̍n---- yê	kí-ta̍-ŋo̍r--------- yê kí-ta̍-ŋo̍r-o̍r▯---- yê	kí-ta̍-bo̍l---------- yê kí-ta̍-bo̍l-o̍ki̍n---- yê
NEUT+APPL			
Present	á----dót---- o̍-----re̍ á----dót-ún- o̍-----ré	á----ŋór----- o̍-----re̍ á----ŋór-ór▯-i̍y-----yé	kí----bo̍l------ o̍-----ré kí----bo̍l-o̍ki̍n- ó-----rè
Past	á-tá-dót---- ò- -rè á-tá-dót-ún- ò- -rè	á-tá-ŋór----- ò- -rè á-tá-ŋór-ór▯-ìy- -yè	
plural	kí-ta̍-do̍t---- o̍- -rê kí-ta̍-do̍t-u̍n- o̍- -rê	kí-ta̍-ŋo̍r----- o̍- -rê kí-ta̍-ŋo̍r-o̍r▯-i̍y- -yê	kí-ta̍-bo̍l------ o̍- -rê kí-ta̍-bo̍l-o̍ki̍n- o̍- -rê
PASSIVE			
Present	áa̍----do̍t-u̍n------------ í	aa----ŋor-or▯------------ i	aa----bol-okin------------ i
Past	áa̍-ta̍-do̍t-u̍▯---- o̍----kí	aa-ta-ŋor-oy▯---- yo----ki	aa-ta-bol-ok▯▯---- ----ki
Subj.	m-áa̍-ta̍-do̍t-u̍n---- ---- í	m-aa-ta-ŋor-or▯---- ---- i	m-áa̍-ta̍-bo̍l-o̍kín---- ---- í
	(1) (2) (3)(4)	(1) (2) (3)(4)	(1) (2) (3)(4)

here it seems fairly clear that the underlying forms are {-ʊn} and {**-akɪn**}, respectively. The consonant deletes when it is word-final or when it precedes the simple past tense[8], active or passive. The underlying form of the MOT AW suffix is {**-ara**} which becomes /**-oro**/ when affixed to a syllable containing a [+ATR] vowel. The second vowel deletes except when it is word-final - as in the simple present tense. The /**r**/ becomes a glide in exactly those cases when the final consonant of the other two suffixes delete - namely, when syllable-final or immediately preceding the simple past tense, active or passive.

In the NEUT PAST tense, considering the phonological shape of the NEUT suffix in the present tense (compound) forms, it seems to me more likely that the phonological segment is a morpho-phonemic alternant of the NEUT suffix and the low tone is what's left of the past tense suffix. Note in the BENEF NEUT PAST (plural) and the simple NEUT PAST (plural) the PAST suffix clearly shows up as distinct from the NEUT suffix *with* a low tone on it. Tucker & Mpaayei give the simple neuter suffix as /**-a**/ after consonants, and /**-na**/ after vowels - assimilating to [+ATR] when preceded by a [+ATR] vowel. In (23) we see that the neuter suffix also surfaces as a [-bk] vowel with glide.

6. CONCLUSION

One of the beauties of generative phonology is that it not only permits us to state concisely the regularities which we know about a language, but it also highlights those places where we do not have enough data to draw firm conclusions. A case in point is that of the compound MOT TO NEUT suffix which is /**-unye**/. The component parts of this morpheme are, one supposes, MOT TO which is {-ʊn} plus NEUT which is {**-na**}; from this combination one would expect ***-ʊnna**, which clearly is not what one finds. In addition, although the two component morphemes are [-ATR] the compound morpheme is [+ATR] and causes Vowel Harmony to itself (cf. Tucker & Mpaayei 1955:149f). The only conclusion one can draw from this is that at some previous time there must have been more morphemic material present than there is now. In my study on Maasai nominal tone (Wallace 1979) I pointed out that at some previous time there apparently was a nominative case suffix, the only remaining trace of which is the tonological change found today. This exactly parallels the situation here. The same problem arises in the case of every one of the compound derivational morphemes. The phonological material which is found on the surface today is such that it does not permit sure conclusions to be drawn about the constituent parts of these fused forms. Clearly part of what is needed for getting closer to a solution is a tonological analysis. It is also possible that a comparative study of the verbal morphology of the other Maa dialects or of Eastern Nilotic in general will give us some clue as to the nature of the other phonological material which has disappeared. At this point I cannot carry my analysis any further in the absence of additional data.

I have attempted to show the regularities of the Maasai verbal complex insofar as they can be arrived at on the basis of Tucker & Mpaayei. It is certainly the case that the simple verb is amenable to morpho-phonological analysis. I hope in the future to be able to say more about the morpho-phonemics of the Maasai complex verb.

APPENDIX: ORDERED PHONOLOGICAL RULES

Rule 1: *VA*

$$\begin{bmatrix}\text{V}\\ +\text{lo}\end{bmatrix} \rightarrow \begin{bmatrix}-\text{lo}\\ \langle+\text{hi}\rangle\end{bmatrix} / \text{t}\_\_ + \text{C}_0 \begin{bmatrix}\text{V}\\ +\text{hi}\\ \langle+\text{bk}\rangle\end{bmatrix}$$

Rule 2: *VH*

$$\begin{bmatrix}\text{V}\\ -\text{lo}\end{bmatrix} \rightarrow [+\text{ATR}] / \_\_\text{C}_0 + \text{C}_0 \begin{bmatrix}\text{V}\\ +\text{ATR}\end{bmatrix}$$

Rule 3: [*-ATR*] *VA*

$$\begin{bmatrix}\text{V}\\ -\text{ATR}\end{bmatrix} \rightarrow \begin{bmatrix}\alpha\text{hi}\\ \beta\text{lo}\\ \gamma\text{bk}\\ \delta\text{rd}\end{bmatrix} / \text{t}\_\_ + \text{C}_0 \begin{bmatrix}\text{V}\\ \alpha\text{hi}\\ \beta\text{lo}\\ \gamma\text{bk}\\ \delta\text{rd}\end{bmatrix}$$

Rule 4: *SVH*

$$\text{V} \rightarrow [+\text{ATR}] / \begin{bmatrix}\text{V}\\ -\text{lo}\\ +\text{ATR}\end{bmatrix} \text{C}_0 + \text{C}_0\_\_$$

Rule 5: *LVR*

$$\text{V} \rightarrow [-\text{lo}] / \begin{bmatrix}\underline{\qquad}\\ +\text{ATR}\end{bmatrix}$$

Rule 6: */k/-DEL*

$$/\text{k}/ \rightarrow \text{Ø} / \begin{bmatrix}\text{V}\\ -\text{hi}\\ \alpha\text{lo}\\ +\text{bk}\end{bmatrix} \_\_ + \begin{bmatrix}\text{V}\\ -\text{hi}\\ \alpha\text{lo}\\ +\text{bk}\end{bmatrix}$$

Rule 7: *MVR*

$$\begin{bmatrix}\text{V}\\ -\text{hi}\\ -\text{lo}\\ \alpha\text{bk}\\ -\text{ATR}\end{bmatrix} \rightarrow \begin{bmatrix}+\text{hi}\\ +\text{ATR}\\ \alpha\text{bk}\end{bmatrix} / \_\_(\text{k}) + \begin{bmatrix}\text{V}\\ +\text{lo}\end{bmatrix}$$

Rule 8: *KAS*

$$\underset{1}{\text{k}} \underset{2}{+} \underset{3}{\text{a}} \rightarrow \underset{1}{\text{Ø}} \underset{2}{+} \underset{3}{\text{aa}} / \begin{Bmatrix}\text{i}\\ \text{u}\end{Bmatrix}\_\_$$

NOTES

* I would like to thank R.M.R. and B.L. Hall for their comments on an earlier draft of this paper.

1. In Wallace 1979 I discussed nominal tone. I have not as yet attempted to analyze verbal tone and I will therefore leave the tonology of the verbal complex to a later paper.

2. In my presentation of these derivations I have arbitrarily chosen to order SVH after VH. I know of no place in Maasai where this ordering is crucial, or even can be crucial since the two rules apply to different segments, and therefore do not really interact with each other. No Nilotic language has prefixes which cause Vowel Harmony to themselves.

3. The /n/ of the feminine gender prefix is deleted before the [+cont] /l/ of the verb stem.

4. Let me note in passing that in the morphophonemic transcription which I am using here I have departed from the orthography used in Tucker & Mpaayei and am writing only /c/ where Tucker & Mpaayei write both [c] and [ʃ] because these sounds are completely in complementary distribution: [c] after a consonant, and [ʃ] after a vowel or word-initially. Although one could in theory use either one or both of these symbols in transcription, since the phonological rules which apply to stops also apply to this segment then clearly from the point of view of the underlying phonology of Maasai this segment is a stop, a fact which is better shown by the symbol /c/.

5. A couple of notes here: First, for the surface form **εrraga** '(you-plural) lie down!' cf. footnote 3. Secondly, I cannot account for the Class II verb having a [+ATR] /e/ in the 3rd person subject pronoun prefix.

6. While not all of the forms in (23) may be found for these particular verb stems in Tucker & Mpaayei, a cursory look at Part 2 "The Verb System" will reveal that Maasai verbs are extremely predictable *in piecing the morphemes together, and in the tones which surface on verbs* (e.g. *all* infinitives consist of all syllables with mid-tone and the *last* syllable with high tone). Therefore I felt it not only acceptable, but most enlightening to the reader to give full paradigms using single verb stems. The verbs **-ŋor**, **-bol**, and **-dotu** are themselves glossed as 'to shoot', 'to open', and 'to take out', respectively.

7. Compare: **á-íbó-óyò** ← /á+i̍bók+ara/; **a-di-aaya** ← /a+dεk+ara/; **a-tε-di-aay[illegible]ye** ← /á+tá+dέk+ara+a/ 'I cursed her as she (or I) went off'. (See Tucker & Mpaayei 1955:126-27.)

8. One could be ingenious and argue that here one is dealing with two different kinds of morpheme boundaries - a contention which is unprovable except that it lets you solve the problem. What one really has to say, in my opinion, is that what we are dealing with is a phonological rule which is sensitive to specific morphemes. It is in fact the case that most phonological rules of Maasai, while admittedly widespread, are keyed to the presence or absence of some specific morpheme, and do not occur in the presence of other morphemes which have virtually identical phonological shapes.

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Lango: Some Morphological Changes in Verb Paradigm

1. Frequently little explanation is offered for analogical changes in verb paradigms. In this paper, I will first describe changes in person/number prefixes in the Lango verb system. Driberg (1923) will be used as the source for an earlier stage of the language, and native speakers will be used for synchronic information, supported by data from Tucker and Bryan (1966). Then, I will hypothesize the direction of change and the motivation. According to Venneman (1972), when morphonemic alternations are eliminated it is the primitive or basic category that survives. In Lango, alternations in the person markings are eliminated in favor of the third person singular prefix. First and second person affixes remain distinct. I will argue that speakers of Lango have reinterpreted the semantic content of the third singular prefix so that now it has a greater function in the language.

Paradigm changes in Lango will be discussed in terms of Greenberg's universals (1963, 1966). The levelings will also be compared to changes that have been discussed for Spanish and Provençal dialects (Bybee and Brewer 1979).

2.1 Lango is a Western Nilotic language spoken in Uganda. Nilotic languages generally mark the verb to agree with both the number and person of the subject. The shape of the inflection is often a shortened form of the personal pronoun (Tucker and Bryan 1966:418).[1] Synchronically, Lango follows this pattern only in a limited way. However, the older form of Lango described by Driberg used the shortened forms of the pronoun as verbal inflections throughout the paradigm as illustrated below (Driberg 1923:320)[2]:

(1)		
	amako	'I seize'
	imako	'thou seizest'
	omako (emako)	'he seizes'
	wamako	'we seize'
	wumako (umako)	'you seize'
	ginako	'they seize'

(2)	*Singular*	*Plural*	
	an	wan	1st person
	in	wun	2nd person
	en	gin	3rd person

The inflections given in (1) are used on all indicative tenses. They are derived from the pronouns[3] that are given in (2) with the exception of the third person singular (3,s). The o- prefix used for 3,s will be discussed below.

From Driberg's description, we can assume that for speakers of Lango at the time he wrote, the following were the subject agreement morphemes.

(3)	*Singular*	*Plural*	
	a-	wa-	1st person
	i-	wu-	2nd person
	o- (e-)	gi-	3rd person

2.2 In modern Lango, the following are the forms of the independent subject and object pronouns:

(4)	*Singular*	*Plural*
	an	wan
	yɪn	wun
	ɛn	gɪn

Shortened forms of these are used as object suffixes to verbs when the object is a pronoun. Examples are given in (5).[4]

(5)		
	ònɛ̀ná	'he/she saw me'
	ònèní	'he/she saw you (sing.)'
	ònɛ̀nɛ́	'he/she saw him/her/it'
	ònɛ̀nwá	'he/she saw us'
	ònènwú	'he/she saw you (pl.)'
	ònɛ̀ngí	'he/she saw them'

Although there are some variations in the form of the verbal agreement depending on the tense/aspect, only the first and second persons singular are marked on the verb with a shortened form of the pronoun. In the past tense the second plural form in the verbal paradigm appears with i-, the second singular prefix, and an optional pronoun which follows the verb. The indicative past 3,s prefix is o-; this is also used in the subjunctive. In the progressive, a- is the 3,s prefix. For illustration, full paradigms are given for the indicative past, habitual, progressive and future, together with the subjunctive forms.

(6) kwanno 'to read'

Past ('I read' etc.)[5]

àkwánò	òkwánò
ìkwánò	ìkwánò (wùnù)
òkwànò	òkwánò

Habitual

àkwánó	òkwánó
ìkwánó	òkwánó
kwánó	òkwánó

Progressive

Intransitive		*Transitive*	
ákwàn	ókwàn	ákwànnò	ókwànnò
íkwàn	ókwàn	íkwànnò	ókwànnò
àkwán	ókwàn	àkwànnò	ókwànnò

Future[6]

Intransitive

ábínó kwàn	óbínó kwàn
íbínó kwàn	óbínó kwàn
àbínó kwàn (pronoun subject)	óbínó kwàn
bínó kwàn noun subject)	

Transitive

àbínó kwànnò	óbínó kwànnò
íbínó kwànnò	óbínó kwànnò
àbínó kwànnò (pronoun subject)	óbínó kwànnò
bínó kwànnò (noun subject)	

Subjunctive

ákwán	ókwán
íkwán	ókwán
kwán	ókwán

3.1 In the form of Lango described by Driberg, there is variation in the 3,s affix. He claims that the o- and e- prefixes are used without any distinction of meaning, with o- being the most frequently heard. In addition Driberg states that the third singular prefix is "frequently omitted in monosyllabic verbs, unless the subject of the verb is itself monosyllabic" (page 301). If we assume that the affix marking person/number on the verb is derived from the pronouns, then e-[7] is the expected form. The o- is an innovation, the source for which is uncertain, but there are several possibilities.

A verbal prefix would not be predicted with a *noun* subject if the affixes are, in fact, pronominal subjects rather than agreements with the subject. The affixed verb in Lango can stand alone or it can appear with an overt subject as given in (7).

(7) a. ònὲná '3,s saw me'
b. έn ònέná '3,s saw me'
c. lócà ònὲná 'the man saw me'

The distinction between (a) and (b) is that in (b) there is more emphasis on the subject. However, the only statement made by Driberg concerning the appearance/non-appearance of a 3,s prefix with an overt noun subject is the one given above, where the syllabic structure of the noun seems to control the presence or absence of the verbal prefix. In modern Lango, the only tense in which a distinction is made concerning a pronoun versus a noun subject is the future.

The adoption of o- as the 3,s marker may reflect the fact that e- had taken on a special meaning, presumably signifying a third person pronominal subject; o- would then have been introduced to indicate a non-pronoun 3,s subject. The motivation for adding the prefix may have been paradigm uniformity since all other persons had a prefix on the verb.

In modern Lango, the 3,s prefix does have a special function, presumably one that has developed since Driberg wrote his description. Today, e- is used to indicate non-switch reference in a stretch of discourse. In the following sentences, e- refers back to a previously mentioned referent, **kwac** in (a) and **loca** in (b).

(8) a. έntɔ̀ έn kwàc ènékò tòttέrέ ètέ bòllò
but he hare 3,s-killed mother-3,s poss. 3,s-and then threw
tòttέrέ
mother-3,s poss.
'...but the hare$_1$ killed his mother and then he$_1$ threw his mother...'

b. lócà òpòyò ní ècégò dɔ́gólá
man 3,s-remembered comp. 3,s-closed door
'The man remembered that he closed the door'

c. **lɔ́cà** **òpòyò** **ní** **òcègò** **dɔ́gólá**

'The man remembered that he closed the door'

In (c), someone other than the man could have closed the door because the non-switch reference prefix **e-** is not used as it is in (b).

In a discussion of verbal prefixes in Acoli, another Western Nilotic language, Crazzolara (1955:107) states that **ε-** is used as the 3,s prefix "in all moods and tenses in subordinate clauses when this **ε-** represents the same subject as that of the main clause". Otherwise the 3,s is unmarked except for the past tense which takes the **o-** prefix. The distinction between the **o-** prefix and the **e-** prefix in Acoli is also discussed by Malandra (1955) who claims that the past and subjunctive 3,s form is marked with **o-**, but **e-** is used "when the verb depends on an main verb of saying" (p. 82). Malandra also claims that **e-** is used in the future and present tenses also for verbs that depend on a main verb of saying. Normally these tenses are unmarked for 3,s. In both Acoli and Lango, **e-** has a special function and can no longer be interpreted as a general marker of 3,s.

3.2 Presently in Lango, **o-** is used only in the past conjugation for 3,s. It would be tempting to claim that **o-** developed from a marker of the past tense, but that is not plausible because **o-** was found as the third singular prefix in all tenses according to Driberg.

One hypothesis concerning the origin of **o-** is that it developed from the demonstrative **no** 'that'. In Lango **no** is suffixed to nominals as illustrated in (9).

(9) a.	**buk**	'book'	b. **dako**	'woman'
	bukko	'that book'	**dakono**	'that woman'

When **no** is added to consonant final stems, the **n** assimilates to the preceding consonant as shown in (9a). Just as a shortened form of the personal pronoun is used as a prefix on the verb, so a shortened form of the demonstrative may have been adopted as a 3,s prefix following a noun subject. The reanalysis of a final vowel on a suffixed noun would have been reinterpreted as a prefix for the following verb, particularly in those instances where the **e-** had been lost as a third person marker.

An alternative source for the **o-** is the stem for 'person', **lo**, with **o-** then being used after a human subject. A third possibility is that the **o-** developed from a masculine marker. In some nouns, the feminine form has a prefix **a-** while the masculine form has an o- prefix. For example, Driberg gives **amin** 'sister' and **omin** 'brother'. Then an alternation between **a** and **o** would be expected. While it is true that in the progressive conjugation, third person singular has **a** as the inflection, this is probably derived from an auxiliary verb as is **bi** which is used in Acoli for the future tense marker (cf. Lango **bino** 'to go' which is used as the auxiliary for the future tense). A reason for suggesting that the progressive **a** is a shortened form of an auxiliary verb is that Tucker and Bryan (1966) show Lango conjugations with **a** as the prefix for all persons in the continuous paradigm.[8]

3.3 Once o- was established as the 3,s prefix, it was extended to third person plural forms. Driberg notes that a singular verb may follow a plural subject if the noun is used in a collective sense. If the prefix for third plural is used, the noun is given a definite reading (page 301). An example would be 'the dogs' *versus* 'dogs'.

For Acoli, Crazzolara (1955) gives the 3,s verb form in all tenses and moods if the subject is a plural noun (page 107). Malandra also indicates that for Acoli the third person plural affix is omitted if the subject is overt (page 82). The effect of this would be to have an unmarked verb for third person.

Other variations for third person plural in Acoli are interesting to the present discussion. The affixes used for subject agreement are given below (Crazzolara 1955).

(10)

	Present	*Past*	*Future*	*Hortative*
1,s	a	a	a	a
2,s	i	i	i	i
3,s	-	o	-	-
1,p	wa	wa	wa	wa
2,p	wu	wu	wu	wu
3,p	gɪ	gu gɪ	gɪ	gu gɪ

Malandra (1955)[9] gives the following for Acoli:

(11)

Present	*Past*	*Future*	*Subjunctive*
a	a	a	a
i	i	i	i
-	o	-	o
wa	wa	wa	wa
u	u	u	u
gɪ	gɪ gu o	gɪ	gɪ gu

Crazzolara (page 107) states that both gu and gɪ are acceptable, but in the past, gu (from gɪ + o) is preferred for third person plural, although not when a subject pronoun is also present. This gives clear evidence that the 3,s o prefix has spread to the plural form.[10]

4.1 The use of the shortened pronominal form as the 3,s prefix has not been replaced with o- in Alur, another Western Nilotic Language. Tucker and Bryan (1966:428) give e- as the prefix for 3,s in all tenses, aspects and moods. Hypothesizing that e is the older form for 3,s, Alur represents an older stage in the verbal paradigms for Nilotic languages. Acoli has made some changes. While retaining the plural prefixes, it has adopted the o- prefix for 3,s, at least for the past tense and for the subjunctive mood. Whether the o- prefix appeared for all tenses and moods at one stage is unknown. Lango illustrates even more changes with the clear semantic distinction between o- and e- for 3,s, and the spread of o- to all plural persons.

With identical verb forms in all plural forms, there is potential ambiguity. However, speakers of Lango have the option of including an overt subject, noun or pronoun. If the context, linguistic or non-linguistic, has established a referent for o-, then the subject is generally omitted in discourse. So, although there is potential ambiguity, it is rarely realized, according to native speakers.

4.2 Greenberg (1966) discusses syncretization[11]: distinctions that exist in an unmarked category are neutralized in a marked category. For example, in English, gender is not ditinguished in the plural third person, only the singular. Singular is universally the unmarked number category (Greenberg). In Lango, there is syncretization with the loss of distinct subject inflections for the plural persons.

The loss of plural inflections may be related to another change that has been noted in the morphology of the language. Driberg lists many ways of forming plurals on Lango nouns. Many of these are no longer productive and many plural forms listed in Driberg have been lost. In addition, the informants frequently use singular forms of nouns for both singular and plural number even though they are aware of the plural forms.[12] Again, context determines the number of the noun, or a quantifier is used with the singular form if a misunderstanding is likely to occur or if specificity is required.

An opposition between two categories that is suppressed in certain environments with the unmarked form appearing, is discussed under the heading of contextual neutralization by Greenberg (1966).[13] Lango shows such contextual neutralization as indicated in the following example.

(12) gwok 'dog'
gwokki 'dogs'
gwokkɔrɔ gwok + mɔrɔ 'some dog/dogs'
dog + some

The replacement of plural subject inflections with one prefix is possibly indicative of the loss of plural as a morphologically marked category.[14]

4.3 As has been illustrated above, in the conjugation for the past tense in Lango the second person plural has been modelled on the second singular form so that i- is the prefix for both. However, in all other conjugations the use of o- has spread from third person singular to all plurals. The data raises questions about the motivation for the loss of older prefixes for plural subject agreement while the first and second person singular forms are retained. In addition, a question may be raised about third singular which although apparently the model for the new plural affix, is distinct from all other forms now, either by appearing with no prefix, or by the use of distinct tone patterns. Some light may be shed on these questions by looking at a discussion of changes in Bybee and Brewer (1979).

5.1 By examining changes that have occurred in verbal paradigms in Spanish and Provençal dialects, Bybee and Brewer (1979) conclude that the most frequent form upon which other words in the paradigm are reformed, is the third singular. An explanation that they give is that this is the most autonomous form[15]; it is learned as a whole rather than as an analyzable word even though the morphology would indicate otherwise. So, to a linguist, the form may appear to be derived from a stem + affix, but the learner of the language acquires and stores the form as one unit. The autonomous forms in a paradigm are determined by semantic factors, including the fact that 3,s is the most frequent form (Greenberg 1966). In addition, 3,s is not one of the participants in the speech event as are first and second persons and so is more general. (Bybee and Brewer credit Benveniste with this distinction.)

In order to account for the spread of the 3,s prefix through the plural category, we must assume that speakers of Lango attributed a wider meaning to the 3,s form. That is, as speakers learned the prefixed verb forms, they were learned as third person rather than just 3,s forms. This reanalysis is not unexpected considering the reported use of singular verb forms for some plural nouns. What is unexpected is the spread of this form to all plural persons. If speakers learned the third person form as a basic or autonomous form, that is, as an unanalyzed whole, there would be justification for its spread once the tendency developed in Lango to leave plural forms morphologically unmarked, as with the nouns.

5.2 The o- prefixed form is not presently the normal form for 3,s. If Driberg is accurate in his presentation of o- as a third person marker in all tenses, then speakers have again reanalyzed the function of o- retaining it only in the past tense (and future with non-noun subjects). The past tense is, then, the most marked tense in the language. Tone differences distinguish 3,s as a distinct form in all other cases. In the progressive conjugation, 3,s has the prefix a-, but the form has a different tone pattern than 1,s. The origin of this affix is still to be investigated in detail.

Whether tone played an important part in distinguishing persons in verb paradigms at an earlier stage is, unfortunately, not known since Driberg did not provide this information. I hypothesize that tone was important for distinguishing tenses, aspects and moods, as it is now, but tone differences between 3,s and other persons in the paradigm developed as a way of keeping 3,s as a distinct form once o- has been reinterpreted as a basic marker for all persons except first and second singular.

First and second persons in Lango, in the singular number, are distinguished by inflection, not tone. Their resistance to change represents the important function they have in the speech event; both are participants as opposed to third person. In some split ergative languages, an ergative pattern is retained only for first and second person subjects (Silverstein 1976). Other discussions of distinctions between first and second person as opposed to third person are included in Hawkinson and Hyman (1974); they discuss a natural topic hierarchy with the speaker being placed at the highest end of the hierarchy and inanimates at the lowest end. The property that distinguishes first and second singular from third is the property of specific reference. In Lango, a language that is primarily a spoken language, the specific reference property of first and second person singular must be the major factor in the resistance to change that is noted in the verb paradigms.

5.3 In this paper, I have described some of the changes that have occurred in the verb paradigms. Much of the explanation is speculative and it is hoped that with closer investigation into other Nilotic languages, more will be learned about the nature and direction of change. By comparing paradigmatic changes in Nilotic languages with changes in other language families, we may learn more about the motivation for changes in paradigm morphology, and the relation between semantic content and phonological shape.

NOTES

* I am grateful to Mary Okello and Florence Monday for the Lango data.

1. Givón discusses the development of verbal inflections from pronoun forms. The pronouns are cliticized to the verb and then interpreted as inflections, as noted for the development of the third singular affix in Indonesian.

2. Unfortunately, Driberg gives no tone differences or vowel quality distinctions.

3. These are both subject and object forms.

4. Note that vowel harmony applies in the second singular and plural forms. The closed vowels condition the change in the open stem vowel. See Bavin and Noonan (1979).

Also note the high tone for object suffixes.

In Nuer, subject inflections are suffixed to the verb.

5. The tone pattern for the past tense for 3,s changes from low low low to low high low with an overt pronominal subject (see example 7). This is the tone pattern found in relative clauses.

Note that Tucker and Bryan (1966:427) give oo as the 3,p prefix.

6. In the future tense, downstep is noted after the subject prefix in first and second persons.

7. Although **ɛn** is the third person pronoun, the occurrence of **e** rather than **ɛ** is explainable. **e** is the dominant vowel of the two in vowel harmony processes. It is distinguished from **ɛ** with the feature advanced tongue root. Presumably the

stronger vowel developed as the subject prefix but note the use of ɛ as the object form for 3,s.

8. They only show 1,s, 3,s and 3,p forms.

9. Tucker and Bryan also give u- as the second plural prefix.

10. F. Monday described the differences between gɪ and gu as dialect differences with gɪ being associated with the central and west areas and gu with the eastern area of Acoli.

11. Greenberg credits Jacobson with this term (Greenberg 1966:27).

12. The use of distinct plural forms seems to be associated with older speakers.

13. Greenberg's concept of contextual neutralization is based on Hjelmslev's 'participation' (Greenberg 1966:28-9).

14. Loss of an inclusive/exclusive category for 1,p may have been an earlier development since some languages in the group have the distinction (Tucker and Bryan).

15. Autonomous forms were first discussed by Zager (1979).

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Lucia N. Omondi

The Verb 'to be' in Dholuo Syntax

1. INTRODUCTION

In Dholuo the verb 'to be' is **bedo**. This is the infinitive or citation form which compares with the most common infinitive forms of Dholuo as in **tedo** 'to cook', **bulo** 'to roast', **nindo** 'to sleep', **beto** 'to cut'. These forms function in sentences such as:

(1) **Tedo rech tek.**
To cook fish is difficult.

(2) **Bedo japuonj tek.**
To be a teacher is difficult.

In speech bedo usually occurs as **bet**. It has a suppletive form **ni** and possibly another one e. Without going into the possible distinctions in the Dholuo verb form, it is reasonably clear that **ni** occurs in the most unmarked contexts of the sentences with bedo. e appears in equative sentences with emphasis as will be seen later.

2. EXISTENTIAL AND LOCATIVE FUNCTIONS

(3) **Nyasaye ni tiye.**
God is there.

(4) **Nyasaye ni tiye e polo kendo e piny.**
God is present in heaven and on earth.

(5) a. **Ngege ni tiye.**
Tilapia is there.
b. **Ngege onge.**
Tilapia is not there/does not exist.

Existential predicates can be exemplified by (3)-(5). There, a form **ni** + **tiye** occurs without a complement as in (3) and (5). **Ni tiye** translates as 'is present' in the sense of 'is there' or 'exists'. (3) therefore means 'there is a god' or 'god exists', while (4) proceeds to attempt to locate the god. (5) can also be followed by a locative phrase as in (6a).

(6) a. **Ngege ni tiye e agulu.**
Tilapia is there in the pot.
b. **Ngege onge e mesa.**
There is no fish on the table.

tiye is the equivalent of the presentative expletive "there" in English.

It invariably occurs with **ni** such that in Dholuo orthography they are often reduced to one word **nitiye** 'is there, there is'. But the forms are separable on evidence of interruptability by other forms such as **ga** (habitual particle) and **mana** 'just, mere' as in (7) and (8).

(7) **Nyasaye ni ga tiye.**
God is always there.

(8) **Ngege ni ga mana tiye.**
Fish is always just there.

Semantically, **tiye** has no meaning of its own. Together with **ni** it has the meaning of 'is there', 'is present'. The meaning of **ni tiye** relates to **bedoye** 'to be there' rather than **bedo** 'to be'. We then have a situation in which **ni tiye** 'is there' relates to **bedoye** 'to be there' as **ni** 'is', as will be seen later in this paper, relates to **bedo** 'to be'. This then raises the question, is there a verb 'to be there' or 'to be present' as opposed to 'to be' in Dholuo, or is there an independent *presentative* element in Dholuo which combines with the verb **bedo** 'to be' in existential or what Stockwell (1977:181) calls presentative construction? Since **bedo** is obviously part of what represents 'to be there', it is reasonable to suggest that in the presentative constructions in Dholuo, the verb 'to be' is used together with a presentative form that appears as **ye** in the citation form **bedoye** 'to be there, to exist', and as **tiye** in **ni tiye** 'is present, is there'.

The **ye** of **bedoye** 'to be there' is separable from **bedo** e.g. by the habitual particle **ga** as in a rare but possible expression **bedo ga ye** 'you be habitually present'. The suggestion here is that **ye** and **tiye** are the Dholuo presentative/existential forms. Stockwell (1977:181) says: "In some...languages there is a word for the Presentative function which has no other meaning." Dholuo in this respect can be categorized as one of these languages, and **tiye** would then be understood to be the presentative form which combines with **ni**, a form of **bedo** in existential sentences.

The opposite of **ni tiye** 'is there' is **onge** 'is not there'. Unlike **tiye**, **onge** functions on its own without **ni** or any other form of **bedo**. Thus, (10a) is the opposite of (9a) while (9b) and (10b) are not possible. The grammar of **onge** is not followed up here, but it might be useful to observe that it can occur as an opposite to **ni** in locative and possessive sentences where the existential interpretation is possible.

(9) a. **Jochiende ni tiye.**
Spirits are there.
b. ***Jochiende ni.**

(10) a. Jochiende onge.
Spirits are not there/do not exist.
Spirits are not here/are not present.

b. •Jochiende ni onge.

Semantically, the existential sentences are ambiguous. For example, (9a) can mean that spirits exist as well as that the spirits are here present wherever 'here' is in relation to the speaker. Neither of the possible meanings depend on the mysterious indefinite nature of spirits because the same interpretations are possible of (11a).

(11) a. Otieno ni tiye.
Otieno is there.

b. Otieno onge.
Otieno is not there.

Thus (11a) might be asserting that Otieno is alive and not dead as might have been suggested. It might also be used to assert that Otieno is present and not absent at a particular place. This ambiguity is reflected in the opposites (10b) and (11b) which may mean that the subjects of the two sentences do not exist, or that they exist but are not present at a particular location. So one of the meanings of sentences such as (9a) and (11a) seems to be clearly existential while the other is in fact locative. But even the more existential sense is not unrelated to the locative sense of these sentences. Lyons' (1968:390) suggestion holds for Dholuo: "From the point of view of their semantic analysis, existential sentences might be described as implicitly locative (or temporal)."

So far, it has appeared as if tiye is simply a presentative marker which is perhaps the most obvious structural marker of the existential sentence. This situation is a little complicated by the fact that the form tiye occurs with locative complements as in (4) and (6). (4) asserts not only that god is there (exists), but that he exists spatially on earth and in heaven. Again tiye occurs in (6) where the tilapia's location is specified as in the pot, and similarly in (15b) where the knife is said to be on the table. Further, similar sentences are possible with ni without tiye as in (12)-(15a).

(12) ?Nyasaye ni e polo kendo e piny.
God is in heaven and on earth.

(13) Jochiende ni e od no.
Spirits are in that house.

(14) a. Ngege ni e agulu.
Tilapia is in the pot.

b. •Ngege ni.

(15) a. Pala ni e mesa.
The knife is on the table.

b. Pala ni tiye e mesa.
The knife is there on the table.

c. •Pala ni.

Semantically, it is difficult to distinguish e.g. (6) from (14a), or (15a) from (15b). However, there is a difference: A sentence like (15b) asserts overtly the existence, or the "being there" of its subject, in this case, pala 'knife', while at the same time it locates the subject spatio-temporally. On the other hand, a sentence without tiye as in (15a) only presupposes the "being there" of its subject, while making an assertion about its spatio-temporal location. This suggestion is supported by the status of (12). Given the notion of the Christian God who is omnipresent and therefore not placable in any one place at one time; and given that God ordinarily has no physical referent, the sense of (12) is rather odd and certainly not as natural as (4) which has tiye.

Perhaps the notions of adjunct and complement could be useful in highlighting the difference between those sentences with ni tiye and those with ni alone. Lyons (1968) defines adjuncts and complements as follows:

> An adjunct is by definition a 'modifier' attached to a 'head', upon which it is dependent and from which it can be 'detached' without any consequent syntactic change in the sentence. (p. 344)
>
> In traditional grammar, the term ['complement'] is used to refer to any word or phrase (other than the verb itself) which is an obligatory constituent of the predicate.... The predicative complement is syntactically required, in order to 'complete' the structure of the predicative (hence the term 'complement'). (p. 345)
>
> In practice, the distinction between sentence-adjuncts and predicative complements is often far from clear.... The same class of words or phrases may occur as a locative or temporal adjunct in one set of sentences and as a complement (of the copula) in the other. (p. 346)

In Lyons' terms, therefore, although we have the same locative phrases such as **e mesa** 'on the table' in (15) they have different grammatical functions depending on whether they are preceeded by **ni tiye** as in (15b) or **ni** as in (15a): Thus, in sentences with **ni** + **tiye** the locative phrases are adjuncts, while in those with **ni**, they are complements. It therefore seems that in Dholuo, sentences with existential sense have the structure

NP + ni + tiye + (locative phrase),

where the locative phrase is an adjunct, while those with the simpler locative sense have the structure

NP + ni + locative phrase,

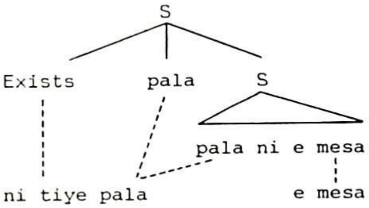
where the locative phrase is a complement of the verb ni. The structures with **ni tiye** are presentative structures of which Stockwell (1977:181) says:

> The presentative formula (whatever shape it takes in a particular language) is a sort of 'existence' predicate, equivalent, in many ways, to the symbol

∃ in logic:
$\exists x P(x)$ = 'There exists an x, such that P is true of that x'.

Following this the sentence (15b) could be represented by Stockwell's tree analusis (16a):

(16) a.



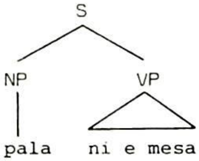
b. Ni tiye pala e mesa.
There is a knife on the table.

c. *Ni pala e mesa.

Hence, in (15b) ni tiye belongs to the higher S while e mesa is part of a lower S. The lower S is the locative construction as in (15a). It is noted that (16b) can paraphrase (15b) but (16c) is not a possible paraphrase of (15a).

The sentences with ni would have the simple tree analysis as in (17).

(17)



3. TEMPORAL LOCATIVES

(18) a. Tugo ni e pap.
The game is in the field.

b. Tugo ni tiye e pap.
The game is present in the field.

c_1. *Tugo en e pap.

c_2. *Tugo e pap.

d_1. Tugo ni tiye kiny.
The game is there towmorrow.

d_4. *Tugo ni kiny.

d_2. Otieno ni tiye kiny.
Otieno is there tomorrow.

d_5. *Otieno ni kiny.

d_3. Otieno nyo ni tiye nyoro.
Otieno yesterday was here.
(Otieno was alive, existed yesterday)

e. Tugo ni tiye kiny.
The game is there tomorrow.

f. Tugo en kiny.
The game is tomorrow.

g. Odni ose bedo ye kuom higni piero adek.
This house has been there for thirty years.

h. Kiny ni gitugi kiny.
Tomorrow will they play tomorrow.
(They will play tomorrow.)

So far, we have considered what may be called spatial locatives (i.e. location of subjects in terms of place). (18d)-(18h) present examples of temporal locatives (location of subject in terms of time). A few differences between the spatial and temporal locatives surface here with respect to the copula: ni + tiye and ni alone can occur in spatial locatives, as in (18a) and (18b) while only ni + tiye can have a temporal adverbial as its complement - hence $(18d_4)$ is not possible. Also (18f) and (18g) are possible as temporal locatives while the spatial parallels of (18c) are not.

Hence there is a difference in the form of the copula, and perhaps more significantly, the copula is obligatory in the temporal but optional in the spatial locatives. Perhaps these differences are due to the kind of nominals that occur as subjects of these locatives. Drawing his example from English, Lyons (1968:340) says that "*be* is found with second-order nominal subjects with both locative and temporal predicates". The implication is that the syntax of the temporal predicates is different because of the complex relationship their surface structures have with the processes of deriving their subjects by nominalization from sentences such as (18h). It might appear to be a problem that, in fact, first-order nominals like Otieno function as subject of temporal predicates as in $(18d_2)$ and $(18d_3)$. However, the problem here could be the difference between ni tiye and ni. This would support the suggestion already made that tiye has existential rather than locative function and so $(18d_2)$ and $(18d_3)$ are existential rather than locative sentences. The significance of this would be that although the presentative tiye occurs frequently with ni, and ni tiye often appears to be in free variation with ni, there is some syntactic correlation to the semantic difference between ni and ni tiye. Their semantic difference is not always clear only because the function of ni tiye overlaps with that of ni.

4. EQUATIVE FUNCTIONS

(19) a. Nyathini en kacha.
This child is my first born.

b. Kacha en nyathini.
My first born is this child.

$(20)a_1$. Otieno en Ja Gem.
Otieno is a man from Gem.

a_2. Otieno ose bedo ja Gem kuom higa achiel.
Otieno has been a man from Gem for one year.

b. Ja Gem en Otieno.
The Gem man is Otieno.

c. Otieno e ja Gem.
Otieno *is* the Gem man.

(21) a. Otoche gin le.
Hyenas are wild animals.

b. ?Le gin otoche.
Wild animals are hyenas.

c. Otoyo en le.
Hyena is an animal.

d. ?Le en otoyo.
Wild animal is an hyena.

e. Otoche e le.
Hyenas are the wild animals.

The sentences (19)-(21) represent the predicative function of the Dholuo verb bedo 'to be' within which logicians distinguish identification, class-membership, and class-inclusion (Lyons 1968:389; Stockwell 1977:18). In (19a) the child is identified with the first born and the order of the linked nouns is easily reversible with the same semantic effect as in (19b). (20a) is a case of a class-membership, Otieno being seen as one of the class of persons characterized as Gem people. That (20b) is possible is attributable to two reasons: First, (20a) can be ambiguous as to whether it is a question of identification, in which case it is like (19), or class-membership. But even as an example of class-membership (20b) can paraphrase (20a) as an example of topicalization for emphasis in specific contexts, in which sense it can be paraphrased by (20c), which is a structure discussed later in this paper. (21) is a case of class-membership. Here the reverse order is possible in cases of emphasis only, which when out of a specific context, sound odd as in (21b) and (21d). This meaning can be paraphrased by (21e). There is no other syntactic significance of the semantic differences in these sentences as far as it is known, and therefore they will here be discussed together as equative sentences.

In the equative sentences, the verb bedo takes the form ni as in locative sentences already discussed. Thus the structure of (19)-(21) can be given as:

PN + ni + NP.

The e which occurs before the n in these sentences is the marker of third person singular in agreement with the subject NP. gi in (21a) and (21b) is the equivalent plural in agreement with the plural NP's otoche 'hyenas' and le 'wild animals'. The agreement is clearer with pronominal subjects as in (22). This is so even with locative sentences as in (23). This suggests that the sentences of (22) have the structure

$NP_1 + P + ni + NP_2$

where P represents the prefix in agreement with NP_1.

(22) a. An an japuonj.
I am a teacher.

b. In in japuonj.
You are a teacher.

c. En en japuonj.
He/she is a teacher.

d. Wan wan jopuonj.
We are teachers.

e. Un un jopuonj.
You are teachers.

f. Gin gin jopuonj.
They are teachers.

(23) a. An an e ot.
I am in the house.

b. Wan wan e ot.
We are in the house.

c. Atieno tedo.
Atieno is cooking

d. En otedo.
He is cooking.

That there is no agreement prefix to ni in locatives with non-pronominal subjects has nothing specifically to do with the copula. This is the same with all the other verbs, as can be seen with tedo 'to cook' in (23c) compared to (23d). Similarly, that the verb ni appears without the final i is part of the behaviour of this vowel in Dholuo. For example, ni kech 'because' often in speech appears as nkech. The auxiliary ni which expresses future occurs as n as in ni gitedi 'they will cook' occurring as ngtedi. The final i of the imperative form of the verb is often elided so that tedi → ted and bedi → bed. Even the final i in the ni in locatives above and possessives discussed below is often left out. Whatever the rule, therefore, it has nothing to do with the copula here as such.

As can be seen in the sentences (22) and (23), the surface form of the copula in equational sentences is the same as the form of the pronouns. As a result, certain questions inevitably come to mind:

(i) Is this formal identity sheer accident?
(ii) Is there a diachronic relationship?
(iii) Is there a synchronic relationship?

There is no attempt to answer these questions here. The synchronic facts are simply that the personal pronouns are an, in, en in the singular; and wan, un, gin in the plural, while ni is the suppletive form of bedo in these sentences and it is prefixed in agreement with the subject NP while the i is deleted.

(24) a. An an japuonj.
I am a teacher.

b. An japuonj.
I am a teacher.

c. A japuonj.
I teacher.

d. Nene an japuonj.
I was a teacher.

e. *An nene Japuonj.

(25) a. *Otieno an japuonj.

b. Otieno en japuonj.
Otieno is a teacher.

c. Otieno japuonj.
Otieno teacher.

In these equational sentences, the copula ni is optional, so (25b) can be paraphrased by (25c). In (25b) the e of en can be analysed as a concordial prefix in agreement with Otieno as third person singular subject. The possibilities with pronominal subjects are in the examples of (24). (24c) could be analysed as

NP + P + ni + NP
[+Pro]

where P is in agreement with the NP subject an 'I'. It is difficult to decide whether there is a ni 'is' in (24b) or not. Hewever, the fact that tense markers like nene wich precede the verbs must occur before an as in (24d) and not after, as in (24e), suggests that the copula is part of the an of (24b). The idea is that it is the pronoun which is deleted because it is redundant, because it is already marked on the ni. This is natural according to Stockwell (1977:17) who says: "Languages which have well-marked person-number affixes in verbs may omit subjects which are transparent in the context or in verbal affixes."

It is difficult to apply this argument to (24c) where the pronoun is simply represented by a and japuonj seems to be functioning as the predication, which can in fact be preeceded by nene as a tense marker as in nene ajapuony 'I was a teacher'. But by extension, this sort of structure can easily be derived by the same rules that delete the copula and the redundant pronominal subject. It is possible to argue that in these equational sentences, there is no verb 'to be' and their structure is simply NP + NP, best shown in (25c). In such an analysis both occurrences of an in (24a) are pronouns, the first one being the topic or theme, and the second the subject. The first objection to this is that, if this were the case, (25a) ought to be possible with the same sense as (24a). In any case the verb bedo 'to be' is recoverable in all these contexts with and without the ni. For example, in sentences with the auxiliary se, which is semantically equivalent to the English perfective "have", bedo replaces ni as in (26a), which parallels (26b) with a more ordinary verb, tedo 'to cook'. Recoverability is seen also in the sentences of (27).

(26) a. Atieno en japuonj.
Atieno is a teacher.
Atieno ose bedo japuonj.
Atieno has been a teacher.

b. Atieno tedo rech.
Atieno is cooking fish.
Atieno ose tedo rech.
Atieno has cooked fish.

(27) a. An japuonj.
I'm a teacher.
Bedo japuonj mara ber.
Being a teacher of mine is good.
(My being a teacher is good.)

c. Otieno tedo rech.
Otieno is cooking fish.

Tedo rech mar Otieno ber.
The cooking fish of Otieno is good.
(Otieno's cooking fish is good.)

5. EMPHATIC EQUATIVES

(28) a. Otieno e japuonj.
Otieno *is* the teacher.

b. In e japuonj.
You *are* the teacher.

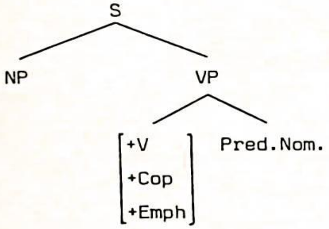
(29) a. Dhok gin muandu.
Cows are wealth.

b. Dhok e mandu.
Cows *are* wealth.

c. Dhok gin e muandu.
Cows they are wealth.

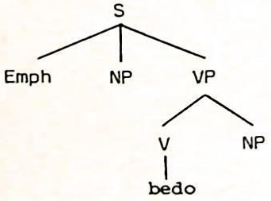
The sentences of (28) and (29) have the sense of emphatic equations. The meaning of e could be translated in English as 'is the one who is'. Thus (28a) asserts that Otieno is the one who is a teacher, and therefore should (for example) be able to solve a particular problem. In one sense therefore e appears to be an emphatic form of the copula analysable with (29b) as in (30).

(30)



However, e can occur with ni as in (29c), which is the same as (29b), except for the element of emphasis. This suggests that e represents the emphasis in the equational sentence. It can therefore be analysed as the emphatic part of the copula here, which remains and functions as the copula after the copula has been deleted. The e can therefore be introduced to a structure such as (31a) by an Emphatic Copula T-rule such as (31b).

(31) a.



b.

Emph	NP	V	PN	
1	2	3	4	⟹
1	2	3#e	4	

e occurs for emphasis in cleft sentences such as in (32b).

(32) a. **Rech e gi ma ji ohero.**
Fish is the thing which people like.

b. **Rech ema ji ohero.**
Fish is what people like.

c. **Rech en e gi ma ji ohero.**
Fish is the thing which people like.

Such sentences can be derived by deleting the copula, giving structures like (32a) and the general **gi** 'thing' which is understood and therefore recoverable.

6. POSSESSION

There is no verb equivalent to the non-auxiliary "have" in English. The sentences of possession use **bedo** + **gi** 'be + with'.

(33) a. **Rawera ni gi pesa.**
The boy is with money.

b. ***Rawera gi pesa.**

c. **In in gi pesa.**
You are with money.

d. **In gi pesa.**
You are with money.

e. **Pesa rawera olal.**
The boy's money is lost.

f. **Rawera ni obedi gi pesa.**
The boy will be with money.

Possession is also expressed in NPs by inflecting what is possessed, followed by the nominal headword, the possessor. The relationship between the NP and the sentences is not discussed here. In the possessive sentences the form is again **ni**. It is not marked in agreement with the third person nominal subject. But the concordial prefix does appear with personal pronominal subjects as in (34). **bedo** appears in these sentences instead of **ni** as in (33f).

(34) **An an gi pesa.**
I am with money.

By way of summary, and concentrating mainly on what Stockwell (1977:10) calls atomic sentences, the following sentences show the environments in which a form of **bedo** occurs with nominal subjects (in the left-hand column) and pronominal ones (in the right-hand column).

(35) **Otieno ni tiye.**
Otieno is there.
An an tiye.
I am there.

(36) **Otieno ni tiye e skul.**
Otieno is there at school.
An an tiye e skul.
I am there at school.

(37) **Otieno ni e skul.**
Otieno is at school.
An an e skul.
I am at school.

(38) Otieno ni tiye gonyo.
Otieno is there today.
An an tiye gonyo.
I am there today.

(39) Tugo ni tiye saa adek.
Game is there at 9 a.m.
En en tiye saa adek.
He is there at 9 a.m.

(40) Tugo en saa adek.
Game is 9 a.m.
En en saa adek.
It is 9 a.m.

(41) Tugo en e saa adek.
Game is the one which is at 9 a.m.
En en saa adek.
It is the one which is at 9 a.m.

(42) Tugo e saa adek.
Game is the one which is at 9 a.m.
En e saa adek.
It is the one which is at 9 a.m.

(43) Tugo saa adek.
Game 9 a.m.
En saa adek.
It 9 a.m.

(44) Otieno en rawera.
Otieno is a boy.
En en rawera.
He is a boy.

(45) Otieno en e rawera.
Otieno is the one who is a boy.
En en e rawera.
He is the one who is a boy.

(46) Otieno rawera.
Otieno boy.
En rawera.
He boy.

(47) Otieno ni gi buge.
Otieno is with book.
En en gi buge.
He is with book.

In Dholuo tense is essentially represented by time adverbials such as nyoro 'yesterday', nene 'long ago', nende 'earlier today', chieng' 'some time to come'. They occur just before the verb as in (48).

(48) Otieno nene tedo rech.
Otieno long ago cooking fish.
(Otieno was cooking fish.)

In the sentences (35)-(47) such tense markers occur before the forms of bedo that are in these structures. That is, where there is ni, en or even e, these can be preceded by nene. nene will also occur between the NPs without a verb as in (46). Where there are pronominal subjects giving rise to a sequence of two identical forms like an an, nene occurs between the two. It is interesting to note that where in such cases only one form like an occurs, the tense markers cannot occur between the an and, e.g., rawera as in (46). Thus, en nene rawera is not possible: it must be nene en rawera, or en nene orawera. This supports the suggestion already made that in such sentences what remains is not the pronominal subject alone, but the form ni prefixed with the relevant form of the pronoun.

Depending on an interplay between tense markers, auxiliaries, and aspect, which are not discussed here, the forms ni, en, etc. are replaced by other forms of bedo. For example, with the auxiliaries ni 'will' and se 'have', bedo reappears as in (49) and (50). In fact, parallel sentences are possible in (35)-(47) except for those sentences with e and in cases where there is ni tiye, the forms of bedo are followed by ye. Parallel sentences to (49) and (50) are possible only if the emphasis in sentences with e is retained as in (51), with ema.

(49) Otieno ose bedo e skul.
Otieno has been at school.

(50) Tugo ni obedi saa adek.
Game will be 9 a.m.

(51) Tugo ema ni obedi saa adek.
Game is what will be 9 a.m.

In all these environments bedo can generally be replaced by any of the main verbs of Dholuo such as tedo 'to cook'. This is the same for the examples (35)-(47) except where there is tiye, e or Ø.

The question as to whether the ni is marked for agreement with its subject is also not peculiar to this form of bedo as has been suggested already. For example, replacing ni in (37) and (47) with tedo 'to cook' we get (52) and (53).

(52)	Otieno tedo e skul. Otieno is cooking at school	An atedo e skul. I am cooking at school.
(53)	Otieno tedo gi buge. Otieno is cooking with books.	En otedo gi buge. He is cooking with books.

In this respect, what is awkward is the sentences of the structure: NP + ni + Time because a sentence like ?tugo ni saa adek comparable to (37) is not really possible. And again the ni is optional in such constructions, bringing them closer to the "equative" sentences. But, as has been suggested, such sentences are special already because of the nature of the nominal subjects that could relate to actual sentences and therefore, account for such peculiarities.

7. SUMMARY AND CONCLUSIONS

When all that has been discussed is taken into account, therefore, the following constitute what may be considered idiosyncratic behaviour of the verb bedo 'to be':

i) It has at least one suppletive form ni;

ii) bedo or ni is optional in the least marked of sentences of the structure
NP + NP and NP + Time.

Otherwise, bedo behaves much like ordinary main verbs.

Semantically, in Dholuo something can:

(i) be there,

(ii) be at/in a place,

(iii) be at a time,

(iv) be with a thing.

Generally, the verb 'to be' in any language will raise problems in philosophy and logic as well as in linguistics. Within Generative Transformational Grammar, the interesting theoretical question is whether the verb 'to be' is a deep structure verb or simply an empty grammatical element in all or any of its uses in a language. Talking about Russian, Latin and Greek, where the verb 'to be' is either optional or non-existent in the most unmarked sentences, but reappears when the sentences are marked, say for tense, Lyons (1968:322f.) concludes that

> '*to be*' is not itself a constituent of deep structure, but a semantically-empty 'dummy-verb' generated by the grammatical rules of Russian, Greek and Latin for the specification of certain distinctions (usually 'carried' by the verb) when there is no other verbal element to carry these distinctions. Sentences that are temporally, modally and aspectually 'unmarked' ... do not need the 'dummy' carrier.
>
> This account of the function of the copula in Russian, Greek and Latin can be generalized for English and other languages, which have a 'verb *to be*' in sentences that are 'unmarked', as well as those that are 'marked', for tense, mood and aspect.

With particular reference to English, Lyons gives the following reasons for not introducing "be" in the deep structure.

(i) Phrases like "the tall man" can easily be derived from P-markers of sentences like "The man is tall".

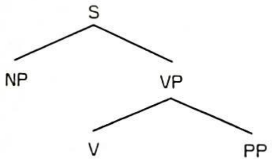
(ii) Introducing "be" into deep structure of sentences will mean many transformational rules for the deletion of this element in many positions in surface structure.

(iii) The verb "to be" in such sentences as "Mary is beautiful" (unlike the verb "cook" in "Mary cooks fish") is in contrast with only a limited set of other "verbs", notably "become".

Emmon Bach (1967:477), similarly arguing for introducing "be" in English transformationally, gives as one reason that it has no meaning of its own, and unlike other verbs it has no independent selectional restrictions but occurs in "constructions where the selections reach across from subject to 'object' or complement". He further claims that his proposed grammar where "be" and "have" are introduced transformationally is simpler and therefore theoretically better. Again, speaking of English, Bent Jacobsen (1977:100) gives reasons for the need to separate "be" from other verbs, e.g. that it sometimes behaves like an auxiliary verb, and it has several different semantic functions such as characterization, attribution, identification, etc.

Looking at the facts of the Dholuo verb 'to be' as presented in this paper, such arguments as have been given for not introducing "be" as a deep structure verb do not necessarily apply. It cannot be denied that there is much which is perhaps universal in the concept expressed by the verb 'to be'. It is true of Dholuo, as it is for English, that for example ni between NPs has several semantic functions. The relationship between "have" and "be" is even clearer in Dholuo than in English, in that "have" is actually expressed in terms of "to be". However, some of the arguments that support transformational introduction of "be" in a language like English would seem to support a deep structure introduction of bedo as a verb in Dholuo. For example, where any form of bedo occurs, it behaves much like other main verbs and never as an auxiliary. Second, a grammar which introduces bedo by transformations will need many more transformations to introduce it than would be needed to delete it where it is not found in the surface structure. So far, an optional transformational rule deleting the copula in one, or perhaps two, environments is all that is necessary to generate the verbless equational sentence and perhaps the sentence with temporal locatives. Third, where ni or bedo occurs, other verbs occur reasonably freely, though of course expressing different relationships. Thus, in contrast with these other verbs, it has a function.

Given the standard model of Generative Transformational Grammar as in Chomsky 1965, the choice is between generating bedo as a verb and deleting it optionally where necessary and introducing it in the appropriate form by transformations where it occurs in the surface structure. Generating bedo as a verb will provide a more powerful and yet simpler grammar for Dholuo. The sentences with bedo can be generated together with the sentences with other verbs from underlying P-markers:



This is suggesting that contrary to the ideas of Lyons and Bach, bedo is a Dholuo verb which means 'to be'. It cannot be said to be meaningless, because e.g., in Dholuo, someone can either be in a house or cook in a house; and there is a difference in meaning between just being in a place and doing something specific in a place. Thus, there are two different verbs in (54a) and (54b) which account for the difference in meaning.

(54) a. Otieno tedo e jikon.
Otieno is cooking in the kitchen.

b. Otieno ni e jikon.
Otieno is in the kitchen.

c. Otieno tedo e jikon to oonge kuro.
Otieno is cooking in the kitchen, but he is not there.

(54a) cannot even be assumed to presuppose (54b) because (54c) is possible. Just as it is possible to be in the kitchen and not cook, it is also possible to cook in the kitchen and not be in the kitchen. It might be argued that bedo is meaningless because it is difficult to identify what it means as a lexical item in isolation. This, to my mind, is a problem of *meaning* in general. It is not difficult to understand what bedo means whenever it is used as long as one knows the language. Whatever problem exists is shared by other verbs as well. For instance what exactly does the verb "run" mean? Considering the denotative meaning of verbs, Palmer (1976:20) says: "It is far more difficult to identify precisely what are the essential characteristics of what is denoted by the verb than what is denoted by the noun." Bedo can therefore be entered in the lexicon as a verb. What is particular to it would then be marked as part of its features in the lexicon. From such structures as (54) we would optionally apply a transformational rule that deletes the verb when it is bedo and is linking two NPs. This kind of analysis agrees with the idea of people like Halliday who, for example, speaking about English says (1967-68, 3:66):

> There seems to be no adequate justification for denying *be* the status of a lexical verb in the language. The fact that it is in certain respects unique is beside the point; so are *have*, *do*, *get* and some others, and it is doubtful whether *be* is significantly 'more unique' than the rest. What is more significant is its non-uniqueness: the fact that it can be clearly assigned in the set of verb classes recognized in the transivity systems.

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Randall Buth

The Twenty Vowels of Dhe Luwo (Jur Luo, Sudan)

1. INTRODUCTION

The phonemic vowel contrasts in the Western Nilotic languages of Sudan have not been satisfactorily described. For example, different analyses of Dinka (Muonyââng) posit 21 (Welmers 1973:29) or 39 vowels (Job Dharuai, personal communication), while Tucker & Bryan (1966:403-4) would imply a segmental analysis of at least 36 and possibly 52 vowels. Numbers this high are very suspicious.

The Luwo language situated around Wau in southwest Sudan has not received extensive investigation. A grammar by Santandrea (1946:92) implies that there are 28 vowel contrasts in Jur-Luo (Dhe Luwo): 7 basic vowel positions, each of which can be contrasted long:short and breathy:hard (or possibly even a three-way breathy:neutral:hard distinction).

In this paper I shall describe the vowel contrasts of Luwo. It will be shown that vowel subsets (short-hard, short-breathy, long-hard, long-breathy, labialized diphthong and palatalized diphthong) do not have symmetrical positional patterns. The total number of pure vowels happens to be twenty (4 + 5 + 6 + 5). Why the subsets are not congruent is an interesting question. Within diphthong sequences it will be shown that uV and wV should be contrasted, as well as iV and yV. Because the different vowel subsets pattern differently, the synchronic analysis will prefer a segmental solution rather than a suprasegmental seven vowels plus two features.

2.1 THE SHORT HARD VOWELS

There are only four contrastive short hard vowels in Luwo. The chart below is written phonemically according to Luwo orthography (/e/ = [ɛ]), a full phonetic chart is given at the end of section 3.

	front	central	back
high	i		
low	e	a	o

[kic]	'bee'	[dɛr]	'cockroach'
[kec]	'hail'	[tȧr]	'white'

[kạc]	'bite	[mọr]	'warm'
[cɪŋ]	'hands'	[ṁȧˑrȧˑ]	'mine'
[piɲ]	'earth'	[mọˑroˑ]	'ant'
[gɛˑnẹˑ]	'they'	[dȧk]	'pot'
[cɪˑŋiˑ]	'your hands'	[koʸɲ]	'help'

The four phonemes /i,e,a,o/ are normally realized as [ɪ,ɛ,ȧ,ọ] (V̇ is a slightly higher vowel, Ṿ is slightly lower.)

Some additional realization rules:

Front vowels rise before a palatal consonant.

/i,e/ → [i,e]/ __$C_{palatel}$

Back vowel rises and receives a slight glide before a word-final palatal consonant.

/o/ → [oʸ]/ __C_{pal}##

The vowels rise slightly in word-final position.

/i,e,a,o/ → [i,ẹ,ȧ,o]/ __## (The change in [ȧ] has not been marked in the transcription since it seems lower than [ə].)

Short vowels lenghten slightly in open syllables.

$/V_{short}/$ → [Vˑ]/ __$

There is no /u/. As a function of vowel harmony, a hard [u] occurs only in words with other hard vowels. The lack of a hard phoneme /u/ will be discussed under long vowels.

Generally the short vowels, both hard and breathy, tend to be more centralized than the long vowels. This has not been marked in the transcription except in the case of the low central vowel, where centralization directly affects vowel height. Thus, [ọ] is between [oː] and [ɔː] in height as well as being slightly more centralized.

2.2 THE SHORT BREATHY VOWELS

"Breathiness" is a popular way of talking about [+advanced tongue root, +open pharynx (?)] and is phonetically transcribed in this paper with a circle under the vowel: V̥. Phonemic forms are written with a circumflex accent in accordance with the present Dinka orthography approved by the Regional Ministry of Education, Juba, Sudan.

The short breathy vowels have five emic constrasts:

	front	central	back
high	ɪ̂		û
low	ê	â	ô

[gɪ̥n]	'what?'	[pɛ̥k]	'reach the end'
[u̥ˑbɛ̥n]	'he will come'	[bə̥t͓]	'insipid'
[gə̥n]	'to trip'	[nɪ̥k]	'shake sideways'
[mɪ̥r]	'long-legged bird'	[ḁ̇ˑnə̥k]	'killed'
[mʊ̥r]	'female pudenda'	[nʊ̥k]	'nod vertically'
[wo̥̥r]	'song'	[po̥ʸc]	'scars'
[dɪ̥ˑgo̥ˑ]	'rubber tube'	[pə̥ˑd͓o̥ˑ]	'fall'
[cə̥ˑŋi̥ˑ]	'near'	[po̥ˑju̥ˑ]	'your scars'

The five phonemes /ɪ̂,ê,â,ô,û/ are normally realized as [ɪ̥,ɛ̥,ə̥,o̥,ʊ̥]. Other rules (similar to the rules for short hard vowels):

The non-central vowels rise in word-final position.

/ɪ̂,ê,ô,û/ → [i̥,e̥,o̥,u̥]/ __##

/â/ and /û/ decentralize at the beginning of a word. (There are no examples of /ɪ̂,ê,ô/ in this paper.)

/â,û/ → [ḁ̇,u̥]/ ##__
/V/ → [V̥ˑ]/ $\_\_\$$
/ô/ → [o̯ʸ]/ $\_\_C_{pal}\#\#$
[o̯]/ $\_\_C_{pal}\$$

The glide is not as noticeable in open syllables.

2.3 THE LONG HARD VOWELS

There are six long hard vowels as follows:

	front	central	back
high	ii		
mid	ee		oo
low	ɛɛ	aa	ɔɔ

[ki:c]	'sift'	[bæ:r]	'good'
[ȧˑke:c]	'Akeec'	[ȧˑpa:r]	'ten'
[kæ:c]	'bitter'	[i:ˑmæ:ˑɲȧˑ]	'you looked (with a light)'
[ȧˑdi:t]	'bird'	[ȧˑma:ˑɲiˑ]	'you looked for'
[kɛˑde:ˑ]	'and'	[ya:t̪]	'wood'

[cɪˑtæːˑ]	'please'	[yɔːt]	'rip'
[kiˑjeːˑ]	'that'	[yoːt]	'find'
[ȧˑkeːt̪]	'it rusted'	[pɔːl]	'clouds'
[uˑkeːˑd̪ẹˑ]	'it rusted'	[poːl]	'calf of leg'
[kæːˑd̪oˑ]	'to spread'	[taːˑrȧˑ]	'lie back'
[uˑkaːˑd̪eˑ]	'it left'	[tɔːˑrȧˑ]	'is not'
[kæːˑ]	'where?'	[toːr]	'broken'
[tæːk]	'strong'	[baːˑ]	'so'
[daːk]	'take along'	[bɔːˑgẹˑ]	'leaves'
[dɔːk]	'return away'	[boːˑ]	'banana'

The phonemes /ii,ee,ɛɛ aa,ɔɔ,oo/ are normally realized as [iː,eː,æː,aː,ɔː, oː].

Long vowels are lenghtened slightly in open syllables.

/Vː/ → [Vːˑ]/ __$

The front mid hard vowel /ee/ is not as common as other long vowels, but it is certainly phonemic. The missing /uu/ will be discussed below.

2.4 The Long Breathy Vowels

There are five contrasts in the long breathy vowels as follows:

	front	central	back
high	îî		ûû
low	êê	ââ	ôô

[ki̥ːc]	'orphan'	[cu̥ːˑro̥ˑ]	'kind of insect'
[ke̥ːc]	'bravery'	[kọ̥ːr]	'guard'
[kɛ̥ːˑdoˑ]	'throw spear'	[ku̥ːr]	'pidgeon'
[kḁ̇ːc]	'kind of tree'	[pu̥ːˑyo̥ˑ]	'plaster'
[kọ̥ːʸc]	'medicine art'	[pọ̥ːˑ]	'kind of tree'
[kọ̥ːʸɲ]	'search'	[pọ̥ːˑdi̥ˑ]	'still, yet'
[ku̥ːˑlo̥ˑ]	'bend'	[pọ̥ːˑlo̥ˑ]	'cloud'
[tḁːŋ]	'antelope'	[bu̥ːt]	'chaw (tobacco)'
[tọ̥ːŋ]	'chop'	[bi̥ːt]	'hemorrhoid'
[cọ̥ːˑ]	'last born'	[yọ̥ːt]	'easy, light'
[cọ̥ːˑro̥ˑ]	'push'	[cu̥ːˑd̪o̥ˑ]	'stump'

The phonemes /îî,êê,ââ,ôô,ûû/ are realized as [i̥ː,ɛ̥ː,ḁ̇ː,ọ̥ː,u̥ː].

Similarly to the short and hard vowels, the following realization rules operate:

/V̥ː/ → [V̥ːˑ]/ __$
/êê,ôô/ → [e̥ː,ọ̥ːʸ]/ __C$_{pal}$

Although there are three long front hard vowels there are only two long front breathy vowels. These long breathy vowels form a normal five vowel pattern:

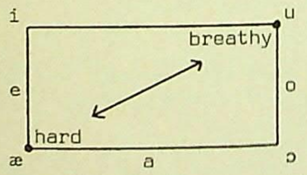
3. Some Problems

Some interesting questions arise from the vowel patterns:

1. Why is there no hard /u/ or /uu/?
2. Why are there only two long front breathy vowels /îî/ and /êê/?
3. Are the three long front hard vowels a split in Luwo, or are the two long back hard vowels the result of a merger? In other words, are the long hard vowels based on an original seven vowel pattern or a five vowel pattern?

3.1 Gaps in the Patterns

To the first two questions I can suggest a framework in which the results appear to be natural. The hard vowels tend to be lower than the breathy vowels. [æː] is lower than [ɛ̥ː]. Even [ọ] seems slightly lower than [ọ̥]. (This has not been marked in the transcription.) Among high vowels, the front one can be breathy or hard while the back high vowel is always breathy. Consequently, one might posit a "domain" in the vowel system:



The long hard vowel then dropped out or avoided the pole of the breathy domain. At the other pole, in the hard domain, there is no constrast [e̥ː] versus [æ̥ː] among the breathy vowels, only [e̥ː]. The domain describes the influence on the system by a feature which generates weak and strong points where phonemic mutation would be most likely. This domain hypothesis is stating that hard /u/ is more susceptible to mutate than hard /i/ and that hard vowels are more likely to expand in the low front quadrant than breathy vowels. J.M. Stewart (Rottland

[cɪ·tæ:·]	'please'	[yɔ:t]	'rip'
[ki·je:·]	'that'	[yo:t]	'find'
[ȧ·ke:t̪]	'it rusted'	[pɔ:l]	'clouds'
[u·ke:·d̪ẹ·]	'it rusted'	[po:l]	'calf of leg'
[kæ:·d̪o·]	'to spread'	[ta:·rȧ·]	'lie back'
[u·ka:·d̪e·]	'it left'	[tɔ:·rȧ·]	'is not'
[kæ:·]	'where?'	[to:r]	'broken'
[tæ:k]	'strong'	[ba:·]	'so'
[da:k]	'take along'	[bɔ:·gẹ·]	'leaves'
[dɔ:k]	'return away'	[bo:·]	'banana'

The phonemes /ii,ee,ɛɛ aa,ɔɔ,oo/ are normally realized as [i:,e:,æ:,a:,ɔ:, o:].

Long vowels are lenghtened slightly in open syllables.

/V:/ → [V:·]/ __$

The front mid hard vowel /ee/ is not as common as other long vowels, but it is certainly phonemic. The missing /uu/ will be discussed below.

2.4 THE LONG BREATHY VOWELS

There are five contrasts in the long breathy vowels as follows:

	front	central	back
high	îî		ûû
low	êê	ââ	ôô

[ki̥:c]	'orphan'	[cu̥:·ro̥·]	'kind of insect'
[ke̥:c]	'bravery'	[kọ̥:r]	'guard'
[kɛ̥:·do·]	'throw spear'	[ku:r]	'pidgeon'
[kḁ̇:c]	'kind of tree'	[pu̥:·yo̥·]	'plaster'
[kọ̥:ʸc]	'medicine art'	[pọ̥:·]	'kind of tree'
[kọ̥:ʸɲ]	'search'	[pọ̥:·di̥·]	'still, yet'
[ku̥:·lo̥·]	'bend'	[pọ̥:·lo̥·]	'cloud'
[tḁ:ŋ]	'antelope'	[bu̥:t]	'chaw (tobacco)'
[tọ̥:ŋ]	'chop'	[bi̥:t]	'hemorrhoid'
[cọ̥:·]	'last born'	[yọ̥:t]	'easy, light'
[cọ̥:·ro̥·]	'push'	[cu̥:·d̪o̥·]	'stump'

The phonemes /îî,êê,ââ,ôô,ûû/ are realized as [i̥:,ɛ̥:,ḁ̇:,ọ̥:,u̥:].

Similarly to the short and hard vowels, the following realization rules operate:

/V̥:/ → [V̥:·]/ __$
/êê,ôô/ → [e̥:,ọ̥:ʸ]/ __C_{pal}

Although there are three long front hard vowels there are only two long front breathy vowels. These long breathy vowels form a normal five vowel pattern:

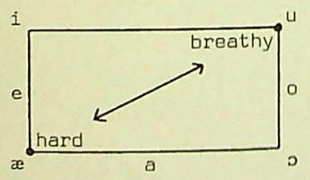
3. SOME PROBLEMS

Some interesting questions arise from the vowel patterns:

1. Why is there no hard /u/ or /uu/?
2. Why are there only two long front breathy vowels /îî/ and /êê/?
3. Are the three long front hard vowels a split in Luwo, or are the two long back hard vowels the result of a merger? In other words, are the long hard vowels based on an original seven vowel pattern or a five vowel pattern?

3.1 GAPS IN THE PATTERNS

To the first two questions I can suggest a framework in which the results appear to be natural. The hard vowels tend to be lower than the breathy vowels. [æ:] is lower than [ɛ̥:]. Even [ọ] seems slightly lower than [ọ̥]. (This has not been marked in the transcription.) Among high vowels, the front one can be breathy or hard while the back high vowel is always breathy. Consequently, one might posit a "domain" in the vowel system:



The long hard vowel then dropped out or avoided the pole of the breathy domain. At the other pole, in the hard domain, there is no constrast [e̥:] versus [æ̥:] among the breathy vowels, only [e̥:]. The domain describes the influence on the system by a feature which generates weak and strong points where phonemic mutation would be most likely. This domain hypothesis is stating that hard /u/ is more susceptible to mutate than hard /i/ and that hard vowels are more likely to expand in the low front quadrant than breathy vowels. J.M. Stewart (Rottland

1980:10) talks about points of awkwardness and says that [-ATR] vowels (i.e. hard) find high positions awkward and that [+ATR] vowels (breathy) find low position awkward. I am suggesting that it may be natural that /u/, not /i/, mutated in Luwo, and that there is no breathy pair /êê,ɛ̂ɛ̂/.

The diagonal domain hypothesis may help explain why Luwo vowels changed where they did but it will raise further questions in Nilotic phonology. For example, why do some southern Nilotic languages drop hard /i/ as well as /u/? Is it phonetically viable to talk of diagonal domain poles at [u] (breathy) and [æ] (hard) for one language and then to switch to horizontal domains [+high] (breathy) and [+low] (hard) for another? I think the answer could be "Yes". The diagonal domain shows how and where a 2 x 5 position system develops toward a 2 x 7 position system while the high-low domains describe the effect as 2 x 5 position systems are reduced. The domain force would warp diagonally as it enlarges its scope. This is food for thought as analyses of other Nilotic languages in Sudan becomes available, particularly Dinka, Nuer, and Shilluk which promise more than five vowel positions.

The hard /u/ and /uu/, if they existed in Proto-Luwo, have most probably been lowered to /o/ and /oo/. There may be some morphological evidence for this shift. The Luwo verbs fairly regularly change from breathy stems in subject-prefix verbs (in SVO clauses) to hard stems in subject-suffix verbs (in OVS clauses). There are a number of breathy /û,ûû/ stems which shift to /o,oo/ as the hard counterpart:

îînûûŋô ke ŋɔɔm	'you leveled dirt'
ŋɔɔm anooŋi	*ditto*
îîrûûbô ke tiiy	'you strung beads'
tiiy aroobi	*ditto*
îîyûrô kê ɲûm	'you scattered sesame'
ɲûm ayori	*ditto*
(with nouns also) lûw/lok	'axes/axe'

This is not always the case, of course, e.g.:

îîpûûyô ke wot	'you plastered house'
wot âpûûyî	*ditto*
îîrûwô ke wot	'you decorate house'
wot ârûûgî	*ditto*
îîpûdô kê lûum̂	'you rooted grass'
lûûm âpûd̪î	*ditto*

From this evidence one may suggest that proto-Luwo */u,uu/ → /o,oo/, thus:

*/ɑ,ɑɑ/ → * ɑ,ɑɑ/
*/u,uu/
↘ */o,oo/

3.2 Five Vowels or Seven?

The third question is more fundamental and is difficult to answer. Theoretically, two original vowel patterns could have preceded the present Luwo hard vowels:

A)	*ii		*uu		ii		
	*ee		*oo	→	ee		oo
	*εε	*aa	*ɔɔ		εε	aa	ɔɔ
or B)	*ii		*uu		ii		
	*εε	*aa	*ɔɔ	→	ee		oo
					εε	aa	ɔɔ

In diagram A, a merger has taken place between */uu/ and */oo/. In favor of this is the simplicity of positing only one merger versus the compexity of diagram B which could need a split in the front vowels *and* a lowering of a back */uu/ in order to explain the present pattern.

However, diagram B solves other problems. First of all, Nilotic languages with established phonologies are based on a five-position pattern. Particularly important in this regard are languages like Acholi and Kenya Luo which are genetically close to Luwo and have five positions. Diagram B also provides some internal Luwo symmetry by suggesting that all the Luwo vowel patterns go back to a five position system rather than seven positions for at least the long tense vowels.

There are also some morphological considerations which suggest that there were only two original long hard back vowels */uu/ and */ɔɔ/. There are verb stems which alternate between /θθ/ and /ɔɔ/:

/dθθyθ/	'strip bark'	/gθθbθ/	'scrape'
/dɔɔc/	'strip bark'	/gɔɔp/	scrape'
/ŋθθrθ/	'copy'	/gθθyθ/	'hit'
/ŋɔɔr/	'copy'	/gɔɔc/	'hit'

What is more suggestive at this stage is that I do not have examples of /θθ/

alternating with /oo/. The closest examples are /ôô/ with /uo/:

/ɲôômô/	'pay dowry'	/ûkôôd̥ô/	'will pass air'
/ɲuom/	'pay dowry'	/akuot̥/	'passed air'

Looking at short vowels, one finds the expected alternation of /ô/ with /o/:

/ɲôŋô/	'beat a hide'	/môô/	'eat'
/ɲoŋ/	'beat a hide'	/mok/	'eat'
/pôrô/	'pour medicinb'	/por/	'pour medicine'

This suggests that the back vowels developed as follows:

*/ûû/ → /ûû/
*/uu/
(Yes) ↘
*/ôô/ /oo/
↘
*/ɔɔ/ /ôô/ (=[ọ̥:])
↘
/ɔɔ/

That is, there was *not* a hard merger:

*/uu/
↘
(No) */oo/ → /oo/
*/ɔɔ/ → /ɔɔ/

However, the morphological analysis is incomplete at this stage and the above can be considered only as a working hypothesis. Taken into consideration with related languages it becomes probable that Luwo had only two back vowel heights.

By symmetry this suggests that the front long hard vowels have expanded from an original two to the present three vowels. And what triggered this expansion? Perhaps long breathy [ɛ̥:] which rises to [e̥:] before palatals. This allophone could be phonemicized by adding a hard [e:].

Another explanation still operates in the language. Short tense /e/([ɛ]) rises to [ẹ] word finally. In the verbal prefix /ge¬/ 'they' it lenghtens before the past tense /a-/ to [ge:-], not [gæ:-]. This provides a contrast in an analogous environment to [kæ:] 'where?'

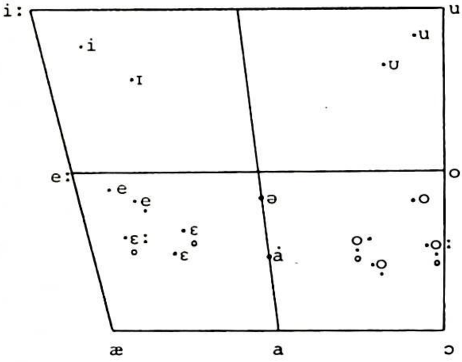
The Luwo vowels, then, have probably come from a five-position system without an intervening seven-vowel pattern. The five breathy vowels, both short and long, would represent the proto-Luwo structure. The short hard vowels merged in the back when (or shortly after) the long hard high back vowel dropped in position.

The present Luwo vowels are charted below:

		front		central			back	
		long	short	long	short		short	long
high	breathy	îî	î				û	ûû
	hard	ii	i			merged	*	**
mid	hard	+ee						oo
low	breathy	êê	ê	ââ	â		ô	ôô
	hard	ɛɛ	e	aa	a		o	ɔɔ

Asterisks and arrows show diachronic vowel shifts. A plus mark shows a recent vowel development. Writing the long vowels with digraphs is an orthographical convenience. They are not double vowels but long vowels, and they take only one tone.

A phonetic chart is also appended (as imagined through my non-Nilotic ears):



4.1 VOCOID SEQUENCES OF *uV*

The patterns of vowels following [u,u̥] allow one to make conclusions concerning labialization and the vowel status of [u,u̥] plus a vowel. [u,u̥] may occur before /i î,e,ê,a,â,o,ô/. The data below will show that [u,u̥] are vowels /u,û/ before the back vowels /o ô/, while they are a consonant /w/ before central and front vowels.

There are four reasons for the above assertion.

1. There is a word [kuiɛk] 'squawking black bird', which can readily be interpreted as /kwiek/. There are no unambiguous cases of CVVVC in the language. However, this sequence /wie/ is unique, /kwiek/ being the only example of it in

my data. Its very uniqueness might have led one to throw it out of general consideration, but better reasons exist for interpreting [u] as /w/.

2. There is a slight perceptible difference in length between the [u,u̥] in [uo,u̥o̥] and the [u,u̥] in [ua,u̥ḁ,ue,u̥e̥,ui,u̥i̥]. In the data below, the vertical mark over a vowel specifies the prominent segment of the diphthong (subphonemic vowel height and lenght of open syllables is not marked):

[lu̥ḁ̍ŋḁ]	'my molar'	[uncui̍da]	'I ate meat'
[ulu̍oŋa]	'I called'	[aujue̍do]	'I will be thin'
[u̥lu̥ḁ̍gḁ]	'I saved'	[ku̥̍o̥̍de̥]	'his shield'
[ulu̍oga]	'I washed'	[ku̥o̥̍t]	'shield'

In the environment of C_$ the [u,u̥] of [uo,u̥o̥] may carry the prominent part of the diphthong. (There is some variation in this rule discussed below.) The [u,u̥] of [ua,u̥ḁ] remains a subsidiary part of the diphthong in the same syllabic environment.

3. Central and front vowels can be long or short when following [u,u̥] while back /o,ɵ/ can only be short.

[ku̥i̥:c]	'to the right'	[a:kue:r]	'I refused'
[ku̥i̥c]	'to not know'	[luak]	'goat pen'
[ku̥e̥l]	'clean'	[lua:k]	'crowd'
[ku̥e̥:l]	'kind of tree'	[ku̥ḁ:re̥]	his stick'
[ujuede]	'he became thin'	[ku̥ḁre̥]	'sticks'
[ukue:re]	'he sacrificed'	[luok]	'wash'

4. Labials and dentals /p b,m,t̪,d̪,n̪/ do not occur with /wV(V)/ following, though /uo,ɑɵ/ may follow them. This is explained as a restriction prohibiting the *consonant* /w/ after labials and dentals (while the vowels /u,ɑ/ could follow).

The following sequences are attested in Luwo:

/wî/	/kwîc/	'to not know'	/kwîr/	'kind of tree'
/wîî/	/kwîîc/	'to the right'	/gwîîro/	'to prepare'
/wie/	/kwiek/	'black bird'		
/wi/	/cwic/	'to suck'	/cwiy/	'river leeches'
/wii/	/cwiic/	'make faces'	/cwiiya/	'river leech'
/wê/	/kwêl/	'clean'	/twêktwêk/	'woodpecker'
/wêê/	/kwêêl/	'kind of tree'	/kwêêr/	'sacrifice'
/we/	/ajwet/	'thin'	/gwey/	'belch'

/wee/	/kweek/	'crack open'	/kweer/	'hoe'
/wâ/	/kwânâ/	'my food'	/kwârê/	'sticks'
/wââ/	/kwâânô/	'to count'	/kwââr/	'stick'
/wa/	/lwana/	'a white hair'	/twak/	'boil'
/waa/	/lwaar/	'white hairs'	/atwaara/	'he snored'
/ûô/	/tûôŋ/	'insects'	/kûôn/	'place'
/uo/	/tuoŋ/	'bastard'	/kuoŋ/	'beers'

There are only two height contrasts in the front sequences /wii, wîî, wee, wêê/. This is in spite of three height distinctions in pure long hard vowels (ii. ee. εε). I did not find a minimal pair between the short /wi, wî/ and /we, wê/. Contrasts with the long vowels are more common: e.g. /gweer/ 'to rake', /gwiir/ 'to prepare', /cweeye/ 'broths', /cwiiya/ 'river leech', /ucwiida/ 'I made faces', /agweeda/ 'he wrote'.

There are differences in the length of [u, u̥] in /uo, ûô/. Below, prominent length is marked ['], vowels are written semi-phonemically:

[bu̥o̥̍t]	'blister'	[tu̥̍o̥ŋo̥]	'insect'
[bu̥o̥̍de̥]	'blisters'	[tuo̍ŋ]	'bastard'
[d̪u̥̍o̥d̪o̥]	'give milk'	[tu̍oŋe]	'bastards'
[ḁt̪u̥̍o̥mḁ]	'I finished off'	[atu̍oŋe]	'he knocked'
[pu̥o̥̍d̪e̥]	'his field'	[ru̥̍o̥c]	'mist'
[upuo̍d̪e]	'he pulled the foreskin'	[lu̥̍o̥̍ŋ]	'to call'
[kuo̍ŋ]	'beers'	[lwa̍ŋ]	'molar'
[kuo̍ga]	'my twins'	[t̪u̥̍o̥̍l]	'snake'
[tu̥̍o̥̍ŋ]	'insects'	[tu̥̍o̥̍l]	'to surface'

The prominence of [u, u̥] in /ûô/ and /uo/ can be predicted as follows:

$$/\hat{u}\hat{o}/ \rightarrow [\text{u̥̍o̥}]/\ C_1\_\_\$ \qquad (C_1 = \text{non-grave})$$

$$[\text{u̥̍o̥̍}]/\left\{\begin{array}{l} C_1\_\_C \\ C_2\_\_\$ \end{array}\right\} \qquad (C_2 = \text{velar})$$

$$[\text{u̥o̥̍}]/\left\{\begin{array}{l} C_3\_\_C \\ C_4\_\_\$ \end{array}\right\} \qquad \begin{array}{l} (C_3 = \text{grave}) \\ (C_4 = \text{labial}) \end{array}$$

$$/uo/ \rightarrow [\text{u̍o}]/\ VC_1\_\_\$$$

$$[\text{u̍o̍}]/\ C_1\_\_\$$$

$$[\text{uo̍}]/\left\{\begin{array}{l} C_3\_\_\$ \\ C\_\_C \end{array}\right\}$$

4.2 VOCOID SEQUENCES *iV*

The situation with diphthongs beginning with [i,i̥] is different from those beginning with [u,u̥]. The word /kwiek/ 'black bird' is a case in point. The [ie] is certainly a vowel sequence but the language does not have a [ue] in a hypothetical /kyuek/. There is also a prominence difference between [ie,i̥e̥,io,i̥o̥] and [i̥ḁ,iaː]. The last sequences have [ḁ,aː] as the major part of the sequence. Below, words are written semi-phonemically with sub-phonemic vowel height ignored as well as open syllable vowel length:

[ɲya̎ːr]	"cut grass"	[ri̥ḁ̎ŋ]	"bare swamp"
[ɲyḁ̎ːr]	"gums"	[ɲi̎aːra]	"to love"
[ɲya̎ːra]	"my daughter"	[ḁli̥ḁ̎p]	"mixed up"
[nia̎ːr]	"to expire"	[u̥li̥ḁ̎be̥]	"he mixed up"
[ḁnḁːr]	"become little"	[aːnia̎ːm]	"I am insulted"
[u̥ri̥ḁ̎ŋe̥]	"he stomp-danced"	[ne̥ti̥ḁ̎y̥]	"t scatter"

There are no contrasts of [ɲya] *versus* [ɲa] so the [ɲya] sequence is interpreted as /ɲa/. (E.g., /ɲaar/ "cut grass", /ɲââr/ "gums".) There is an emic difference between [ɲyaː] and [niaː]. This would be /ɲaa/ and /nyaa/ but they are written "nyaa" and "niaa" in Luwo because of the prevalence of "ny" as a digraph in African languages.

The hard vowel sequences [iaː] all have length and prominence on the second part of the sequence. Consequently they are interpreted as /yaa/.

The breathy sequence [i̥ḁ] is not as long as the hard sequence. (Yet they seem longer than simply [i̥ḁ]; a narrower transcription would be [i̥ḁˑ].) The [i̥] does not seem to receive prominence in open syllables as do other breathy diphthongs, so it has been interpreted as /y/. (E.g. /âlyâp/ 'he was mixed up'.) This is similar to [uo,u̥o̥] when following labials.

In sum, there does not seem to be an /ia/ diphthong, only a CCV(:) palatalization: /Cyâ,Cyaa/.

The [ie,ie] sequences appear to be true diphthongs, fully vowels:

[kwi̍ek]	'black bird'	[cer]	'insipid'
[wi̍e̍l]	'spell'	[aci̍e̍ra]	'I stirred'
[ti̍e̍w]	'sperm'	[ɲi̍e̍l]	'to push over'
[ti̍e̍we]	'his sperm'	[di̥̍e̥̍l]	'anvil-wood'
[li̍e̍l]	'bright'	[ŋo̥ːpi̥̍e̥le̥]	'he laid it down'
[li̍e̍c]	'elephant'	[nepi̍ela]	'to defecate'

There is no emic length contrast in the second vowel of the sequence, and the [i,i̥] can carry prominent length. Because of this, and remembering /kwiek/, it is straightforward to decide on the non-consonantal, vocalic status of /ie,îê/.

The sequences [io,i̥o̥] are less frequent than /ie,îê,yaa,yâ/:

[ḁpi̥̍o̥k]	'ivory bracelet'	[ari̍o̍w]	'two'
[pi̥o̥pi̥̎o̥̎w]	'quickly'	[ḁri̥̍o̥̍w̥e̥]	'parasites'
[pḁpi̥̎o̥̎w]	'quickly' (in fast speech)	[ḁri̥̎o̥̎w]	'parasite'

There is no length contrast [o,o̥] versus [oo,o̥o̥], and [i,i̥] can carry prominent lenght. Consequently, Luwo has vowel diphthongs of /io,îô/.

It should be noted that the iV diphthongs are restricted in distribution. They never follow velar stops (/k,g/), though /kwiek/ is attested. /yaa/ and /yâ/ do not follow velars or labials. However, the six sequences /ie,îê,yaa,yâ, io,îô/ cannot be fitted into a consistent complementary distribution pattern. E.g., they all occur after /r/: /ariow/ 'two', /ârîôwê/ 'parasites', /ariet/ 'operated on', /ârîêc/ 'bashful', /aryaaŋ/ 'is bald', /âryâŋ/ "he stomp-danced".

That /kwe/ should occur to the exclusion of velar /kye/ or /kie/ can be accepted as intrinsically probable, though /ŋie/ (e.g., /ŋiero/ 'laugh') upsets a complete velar restriction. The restriction of labials with /yaa/ or /yâ/ can also be explained. The palatal *consonant* in /yaa/ and /yâ/ would not follow labial or dental consonants, though there would be no restriction on the *vowels* in /ie,îê,io,îô/. This conforms the analysis already arrived at on different grounds.

To sum up, the vocoid sequences in Luwo are:

		front		central		back
		long	short	long	short	short
(labio-velar)						
high	breathy	wîî	wî			
	hard	wii	wi			
high	breathy	wêê	wê	wââ	wâ	ûô
	hard	wee	we	waa	wa	uo
(palatal)						
	breathy		îê		yâ	îô
	hard		ie	yaa		io

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[ɲya̍ːr]	"gums"	[ɲia̍ːra]	"to love"
[ɲya̍ːra]	"my daughter"	[ḁli̤a̤̍p]	"mixed up"
[nia̍ːr]	"to expire"	[u̥li̤a̤̍be̥]	"he mixed up"
[ḁnḁːr]	"become little"	[aːmia̍ːm]	"I am insulted"
[u̥ri̤a̤̍ŋe̥]	"he stomp-danced"	[ne̥ti̤a̤̍y]	"t scatter"

There are no contrasts of [ɲya] *versus* [ɲa] so the [ɲya] sequence is interpreted as /ɲa/. (E.g., /ɲaar/ "cut grass", /ɲâ̂ar/ "gums".) There is an emic difference between [ɲyaː] and [niaː]. This would be /ɲaa/ and /nyaa/ but they are written "nyaa" and "niaa" in Luwo because of the prevalence of "ny" as a digraph in African languages.

The hard vowel sequences [iaː] all have length and prominence on the second part of the sequence. Consequently they are interpreted as /yaa/.

The breathy sequence [i̤a̤] is not as long as the hard sequence. (Yet they seem longer than simply [i̤a̤]; a narrower transcription would be [i̤a̤ˑ].) The [i̥] does not seem to receive prominence in open syllables as do other breathy diphthongs, so it has been interpreted as /y/. (E.g. /âlyâp/ 'he was mixed up'.) This is similar to [uo,ṳo̤] when following labials.

In sum, there does not seem to be an /ia/ diphthong, only a CCV(:) palatalization: /Cyâ,Cyaa/.

The [ie,ie] sequences appear to be true diphthongs, fully vowels:

[kwi̍ek]	'black bird'	[cer]	'insipid'
[wi̍e̍l]	'spell'	[aci̍e̍ra]	'I stirred'
[ti̍e̍w]	'sperm'	[ɲi̍e̍l]	'to push over'
[ti̍e̍we]	'his sperm'	[di̤̍e̤̍l]	'anvil-wood'
[li̍e̍l]	'bright'	[ŋo̥ːpi̤̍e̤le̥]	'he laid it down'
[li̍e̍c]	'elephant'	[nepi̍ela]	'to defecate'

There is no emic length contrast in the second vowel of the sequence, and the [i,i̥] can carry prominent length. Because of this, and remembering /kwiek/, it is straightforward to decide on the non-consonantal, vocalic status of /ie,îê/.

The sequences [io,i̤o̤] are less frequent than /ie,îê,yaa,yâ/:

[ḁpi̤̍o̤k]	'ivory bracelet'	[ari̍o̍w]	'two'
[pi̤o̤pi̤̍o̤w]	'quickly'	[ḁri̤̍o̤̍w̤e̤]	'parasites'
[pḁpi̤̍o̤w]	'quickly' (in fast speech)	[ḁri̤̍o̤̍w]	'parasite'

There is no length contrast [o,o̥] versus [oo,o̤o̤], and [i,i̥] can carry prominent lenght. Consequently, Luwo has vowel diphthongs of /io,îô/.

It should be noted that the iV diphthongs are restricted in distribution. They never follow velar stops (/k,g/), though /kwiek/ is attested. /yaa/ and /yâ/ do not follow velars or labials. However, the six sequences /ie,îê,yaa,yâ, io,îô/ cannot be fitted into a consistent complementary distribution pattern. E.g., they all occur after /r/: /ariow/ 'two', /ârîôwê/ 'parasites', /ariet/ 'operated on', /ârîêc/ 'bashful', /aryaaŋ/ 'is bald', /âryâŋ/ 'he stomp-danced'.

That /kwe/ should occur to the exclusion of velar /kye/ or /kie/ can be accepted as intrinsically probable, though /ɲie/ (e.g., /ɲiero/ 'laugh') upsets a complete velar restriction. The restriction of labials with /yaa/ or /yâ/ can also be explained. The palatal *consonant* in /yaa/ and /yâ/ would not follow labial or dental consonants, though there would be no restriction on the *vowels* in /ie,îê,io,îô/. This conforms the analysis already arrived at on different grounds.

To sum up, the vocoid sequences in Luwo are:

		front		central		back
		long	short	long	short	short
(labio-velar)						
high	breathy	wîî	wî			
	hard	wii	wi			
high	breathy	wêê	wê	wââ	wâ	ûô
	hard	wee	we	waa	wa	uo
(palatal)						
	breathy		îê		yâ	îô
	hard		ie	yaa		io

NOTE

* I have been living with my wife and family in Mbili, 27 miles SE of Wau, Sudan, since November, 1978. The data on which this paper is based was collected from Luwo residents on the immediate area and may or may not be valid for some Luwo speakers west of Wau.

I would like to thank S.I.L. colleagues Wanda Pace and Ron Sim for helpful suggestions at various stages of the work on this paper.

Vowel harmony and tone have not been dealt with in this paper. Briefly, it can be noted that there are three tonemes in Luwo: high, mid and low. Vowel harmony exists within words among breathy and tense vowel subsets.

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John W. Burton

Some Observations on the Social History of the Atuot Dialect of Nilotic

The combined efforts of linguists and social anthropologists have often been of especial value and significance in the consideration and analysis of historical traditions of African peoples, who, until recently, lacked an indigenous literature. The work of each specialist can potentially serve to verify or refute the claims of the other, in an manner analogous to that which archaeologists employ in descerning relations between horizons of material culture and specific chronological sequences. In this brief essay, I am primarily concerned with an analysis of the genesis of dialects among pastoral Nilotes of the Southern Sudan with specific reference to the Atuot. Additional observations are made with reference to patterns of dialect usage among these people. To begin, some general comments on the Atuot are required.

The people called Atuot are a group of transhumant pastoralists inhabiting what is now Eastern Lakes Province in the Southern Sudan. In accordance with seasonal changes in rainfall, they also practice a mixed horticultural economy, which, when combined with a variety of riverine resources, provides the staple diet. Thus, while they think of themselves as "pastoralists", under present circumstances, they would be unable to provide for their physical well-being were they entirely dependent upon bovine resources.

Atuot are divided into six named sub-tribes or what I prefer to call sections, the Apak, Luac, Jilek, Rorkec, Akot and Kuek. Members of each section from birth claim patrilineal descent from one of six founding ancestors: Jilek, for example, glosses as 'the people of Lek'. These groups are not exogamous since marriage is permitted among members of the same section as long as no direct relation of agnation can be traced within six generations between the prospective parties to the marriage. The exchange of bridewealth legitimizes marriage with forty head of cattle typically cited as the ideal number. In fact, this norm is often an under or over estimation. Social traditions also posit a fixed association between one or another section and a specific named territory. Each of these includes elevated forested savannah which is cultivated during the rainy season, in addition to an area of permanent riverine pasture (toic) where cattle are driven to graze in the dry season, roughly between December and March.

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The economic and environmental factors play a dominant role in the social organization of Atuot society, and, I hope to demonstrate, they are equally fundamental in the understanding of both historical and contemporary dialect usage and ethnic identification among the Atuot. This point is more fully discussed in the conclusion of the present essay.

At this point, something ought to be said directly about the ethnic *qua* linguistic designation "Atuot". It is a commonality in anthropological studies that a language and a people share a common name, that the "Eskimo" speak Eskimo, and so on. One observes just as often that the particular ethnic designation applied to a particular people is not the same as that which is employed indigenously. Most recently Southall (1976) reprimands anthropologists for their failure to refer to the Nuer as Naath, their own term for self-reference, and to the Dinka as Jaang, for the same reason. In the case at hand, the term "Atuot" is similarly ephemeral, and it is appropriate in this context to note that the late A.N. Tucker along with Bryan (1948) initially recognized the fact which has, nevertheless, gone uncorrected for nearly four decades. Anthropological authorities for this region of Africa are not however entirely to blame for the misusage.

As indicated, the criteria of language and its usage have traditionally been employed by anthropologists to delimit ethnic groups, and to a certain extent, subject peoples utilize a similar classification. For this reason, Nuer have become known by a name which they do not (at least in the "traditional" setting) employ for self-reference, while they *are* called Nuer by both the Dinka and Atuot. In the same manner, Dinka and Nuer use the term Atuot when referrin
to a people who call themselves Reel and who speak **thok cieng** Reel, 'the languag
of the people of the land of Reel'. The individual named, Reel, is claimed to b
the ancestral figure who led the initial migration of his people into their present country after parting company with the Nuer. The Atuot and Nuer refer to the Dinka as Jaang, a term which connotes a measure of insult for it also intimates the inferior status of "foreigner". There is a curious demographic paradox to this usage; the Dinka are estimated to number more than a million the Nuer not quite half as many and the Atuot are only as numerous as a smal
Dinka or Nuer tribal segment. In the main, Atuot and Nuer live surrounded b
Dinka.

It is customarily asserted that the ethnic classification Dinka is a b
tardization of a once prominent chief, Dengkur (see e.g. Nebel 1954:7). L
wise, it is plausible that Naath became known as Nuer because their existe

s first brought to the attention of outsiders by the neighbouring Dinka, hilluk or even itinerate Arab traders (cf. Sacks 1979). The origin of the term tuot as an ethnic label is equally problematical, and thus invites further comment. In the Nuer language the phrase **ngut atuot** refers to a 'bull kept for service; not to be castrated' and the word **gatuot**, 'aristocrat, the most noble of the tribe' (Kiggen 1948:334, 100). Crazzolara (1933:49) translates the compound word **gatatuot** as 'sons of chiefs of bulls', that is, socially dominant individuals who act as mediators and spokesmen (see also Evans-Pritchard 1940:179). Among the western Dinka **atuot** refers to a type of bovine with especially wide-spreading majestic horns, which they believe originates in Atuot country (Deng 1973:106). In each of the three languages mentioned the noun **tuot** refers to the spur-winged goose (*Plectropterus gambensis*). As an adverb in the Atuot tongue, the term **reel** connotes the mental capacity of cleverness as well as a task that is difficult to perform and unpredictable in its results. A word which is nearly homophonic, **rial**, is an ox-color denoting a predominantly dark animal with a splash of white standing out starkly against an otherwise muted hide. This term is clearly cognate with Lienhardt's (1963:87) translation of the Dinka **rial**, 'dazzling array' or 'shining beauty'. When considering their own identity as Nilotes, Atuot similarly speak of themselves as a people who "stand apart" or who are seperate - a notion fully consistent with the ox-color metaphor. Stated somewhat differently, there is an analogical identity between an isolated patch of color and a people who view themselves as separate, standing out among others. This interpretation is closely akin with the Nuer term **atuot** (from **tut**, 'bull') meaning 'aristocrats', those who are distinguished fr the common lot.

Understandably, exactly how the contemporary distinctions between these three peoples evolved is a problem that will elude any single solution for so time. With reference to the economic factors attending ethnic identity, it c be observed that the type of pastoralism practiced by these people is essent ly similar, with slight, yet significant, ecological variables effecting eac form. In consequence of this, one observes in essence regional variation i common pattern of ecological and thus economic adaptation. One could there assert that in association with micro-environmental variations, differences cultural practice as well as in language developed over longer or shorter periods of time. Vindication of this analysis is implicit in Howell's (1955:238-9) statement, "The environmental parameters of ethnic interactio relatively clear, as scarcity of dry season pasture or elevated land durin water (i.e., the annual Nile flood) corresponds positively with increased inter-tribal warfare and raiding".

With this later observation in mind, I would like to return briefly to a point hinted at already. In free translation, the Reel people consider themselves to be distinct from their Nuer and Dinka neighbours. The practical basis for their assertion is based implicitly upon their ownership of cattle. For them, the social world is defined in part, indeed fundamentally, upon the ties which emerge between people on the basis of cattle pasturage, ownership, protection and exchange. As just mentioned, to the Ngok Dinka, the Atuot are the people who own the type of cow Ngok call **atuot**. In this sense, ethnicity is defined on the hoof. The Mandari, a people whose cultural and linguistic affinities were once much closer to the Bari speaking peoples, have been in the process of "becoming Nilotes" over the past sixty years in their gradual assumption of pastoralism (see Buxton 1963, 1973). And it is worthwhile in the present context to be reminded once more that the Nuer too "are of comparatively recent origin as a people" (Howell 1955: 208).

The preceding discussion may now be considered in relation to the process of ethnogenesis among Nilotes in the Southern Sudan. In a casual way, social anthropologists once tended to think of particular ethnic groups as somewhat impervious, distinct social entities. Yet in the present context, when the ecological and economic parameters of pastoralism are viewed under a finer lens, what emerges instead is a composite picture, formed by overlapping territories inhabited by people who speak related yet equally distinct dialects. Lienhardt (1958) has demonstrated that common tribal affiliation does not necessarily impell common sentiments of social intercourse. Among the Ngok Dinka, who have been in contact with northern Sudanese in a protracted manner for a considerably longer period than other Dinka groups, a great deal of Dinka-Arab intermarriage has occured. As a necessary consequence of this there has likewise transpired considerably more "borrowing" and intermixture of Arab with Dinka custom than elsewhere in Dinkaland. In the same way, where Dinka, Nuer or Atuot share common dry season pastures, there has been more ethnic inter-marriage than where relations are limited in the main to members of a single "tribe". Therefore, the three distinctions Dinka, Nuer and Atuot are somewhat crude and superficial and have meaning only at the abstract level of linguistic, rather than social classification.

Local custom obscures the distinctions all the more so. In each society following the birth of her first child a mother returns to her natal home to raise the baby, and may remain there until he or she reaches puberty and is initiated. In eastern Nuerland, it is not at all uncommon to find that a Nuer man marries a Dinka woman. If she is Ceic Dinka by birth, she will thus reside in Dinkaland while the child matures. The pervading idiom of patrilineality will later enter to effect the social classification of the child's heredity and he or she will become a member of the father's lineage, thereby becoming Nuer. The ethnic designation will be entirely artificial until the child learns the Nuer language. Obviously in this process a considerable portion of linguistic borrowing will occur. Were one to speculate about similar phenomena taking place over some unknown hundreds of years, it would be most difficult in the extreme to state "when" the genesis of dialect and ethnic and linguistic peculiarities occured. Rather, one would be forced to conclude that they are constantly in the process of becoming. There is a limiting factor already mentioned, namely, the ownership of cattle. Those who decide to live together to protect their herds will necessarily share a common dialect and in the process of its natural evolution, each dialect will come to have its own peculiar and distinctive features. Indeed, as we find, there are not three distinct languages called Nuer, Dinka and Atuot, but rather variations of these languages in a number of dialects.

THE ATUOT DIALECTS

I have thus far suggested that "Atuot" is not the correct designation for the language spoken by the people called Reel though I have implied that **thok** Reel is a single dialect. This is not in fact the case, as Bryan and Tucker (1948) noted some time ago. Their initial observations must now however be somewhat refined. First, Atuot do not (as Bryan and Tucker wrote) refer to themselves by this term, but are called Atuot by the Nuer and Dinka. Second, the dialects of the "dialect cluster" which Bryan and Tucher list are "Apak Atuot" and "Aril". The correct spelling and pronunciation of the second term is Reel, not Aril, which is spoken by the Jilek, Luac, Kuek and Akot sections. Members of each of these sections will inform the traveller through their country that the Rorkec "Atuot" speak a more "pure" form of **thok** Reel, one that is rather less laced with Dinka vocabulary and intonation. Also, it is my experience that the Rorkec compose all their ox-songs in a true Atuot dialect, while members of the other sections typically combine both Dinka and Atuot in their forms of oral poetry. There is a rather simple explanation for this. The Rorkec do not share any border with the Dinka and tend on the whole to be more endogamous than the other Atuot sections. By contrast, members of the Luac, for example, are in more frequent contact with the Ceic Dinka, the Akot with the Aliab Dinka, and so on. Young men of the latter sections increasingly find wives among these Dinka groups. Thus, the inclusion or admixture of Dinka in their songs and pedestrian conversation is something of a necessity. Likewise, the Kuek, bordering Mandari land, have adopted a number of Mandari usages in their own "sub-dialect". Nonetheless, the language spoken by these five sections is essentially similar. Most Atuot are also bilingual in Dinka and this fact is possibly the primary reason for the common mistaken nomenclature "Dinka Atuot". There is an element of necessity in their bilangualism. Most Atuot must cross through Dinka land in order to reach dry season pastures. A single mode of communication coupled with occasional intermarriage assures that peacable relations will generally pertain between them in order to assure safe passage with their cattle. Personal experience offers another light on this phenomenon. I have often been in the company of Atuot friends when a number of Ceic or Agar Dinka were present. For the purpose of immediate communication, Atuot would speak Dinka to their cultural neighbours but could then turn quickly among themselves and speak **thok** Reel, thereby excluding the Dinka who may be present from the gist of the ensuing conversation. Dinka have no similar alternative. For the Atuot, **thok** Reel is their first language and Dinka a second tongue.

The Apak case is peculiar though once again, when something is known of their social history, the singularity of their dialect can be at least partially explained. The Apak are the most numerous of the six Atuot sections and also the most ethnically diverse. While members of the other sections share a single agnatic heredity (at least in principle) the eight sub-sections of the Apak have no single social charter of their ancestry. Some have migrated into Apak country from Bor Dinkaland east of the river Nile, some from the Ceic Dinka and still others from the Jur and Sophi to the south and west of Apak country. The very name "Apak" is derived from the Dinka verb **puk**, 'to separate'. The ethnic designation thus implies 'those who have separated', becoming migrants into a foreign territory. And in this light, it is interesting to note that the other Atuot regard Apak territory as a space which separates them from the Agar, Agok and other Dinka tribes. Even after I had learned **thok** Reel to the satisfaction of my Atuot teachers, it remained difficult for me to converse with Apak when they spoke what they called **thong** Apao, the Apak dialect. By contrast, I found it far less difficult to speak with Nuer. Hence, if there is a dialect that could be called "Dinka Atuot", as some authorities maintain (e.g. Deng 1973), then the Apak dialect approaches this classification most closely. The social fact conditioning usage of the Apak dialect is that just as often as not, Apak men find their wives in Agar and Ceic Dinka country as they do among other sections of Atuot. They are indeed a people who are separate from the other Reel people.

By way of summary to this point, it can be reiterated that the five other sections of Atuot share a common social history, one that begins with a migration from western Nuerland, southward into their present country. For this reason in association with their high rate of ethnic-endogamy, the Atuot language(s) share(s) closer affinities with Nuer than it does with Dinka. As linguists would expect, there have nevertheless been systematic and predictable changes which have resulted in this distinction, as these brief examples illustrate:

w in Dinka becomes y in Nuer/Atuot: **weng** 'cow' > **yang**
k in Dinka becomes m in Nuer/Atuot: **kedu** 'yours' > **medu**
y in Dinka becomes w in Nuer/Atuot: **yan** 'place > **wan**

With reference to vocabulary as well, the Nuer and Atuot languages are much more alike than either is to Dinka:

	Dinka	*Nuer/Atuot*
'cow'	weng	yang
'bull'	thon	tut
'ox'	mior	thek
'war spear'	tong	mut
'beer'	mou	kung
'incest'	akeeth	rual
'husband'	moc	cou
'wife'	tieng	cek
'child'	mieth	gat

SUMMARY COMMENTS

As I have argued elsewhere and as others have written, it is likely that in some unknown time past, these three peoples were in closer and more prolonged contact. In the course of small scale migrations from a larger homeland, peoples separated to go their own way in search of new lands to seek resources for their any border with the Dinka and tend on the whole to be more endogamous than the other Atuot sections. By contrast, members of the Luac, for example, are in more frequent contact with the Ceic Dinka, the Akot with the Aliab Dinka, and so on. Young men of the latter sections increasingly find wives among these Dinka groups. Thus, the inclusion or admixture of Dinka in their songs and pedestrian conversation is something of a necessity. Likewise, the Kuek, bordering Mandari land, have adopted a number of Mandari usages in their own "sub-dialect". Nonetheless, the language spoken by these five sections is essentially similar. Most Atuot are also bilingual in Dinka and this fact is possibly the primary reason for the common mistaken nomenclature "Dinka Atuot". There is an element of necessity in their bilangualism. Most Atuot must cross through Dinka land in order to reach dry season pastures. A single mode of communication coupled with occasional intermarriage assures that peacable relations will generally pertain between them in order to assure safe passage with their cattle. Personal experience offers another light on this phenomenon. I have often been in the company of Atuot friends when a number of Ceic or Agar Dinka were present. For the purpose of immediate communication, Atuot would speak Dinka to their cultural neighbours but could then turn quickly among themselves and speak thok Reel, thereby excluding the Dinka who may be present from the gist of the ensuing conversation. Dinka have no similar alternative. For the Atuot, thok Reel is their first language and Dinka a second tongue.

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SUMMARY COMMENTS

As I have argued elsewhere and as others have written, it is likely that in some unknown time past, these three peoples were in closer and more prolonged contact. In the course of small scale migrations from a larger homeland, peoples separated to go their own way in search of new lands to seek resources for their needs, sometimes incorporating indigenous peoples (as has been the case in central Nuerland) or inhabiting an enclave of sorts as is presently the case with the Atuot. There is some indication that the genesis of these migrations occurred in association with the gradual assumption of pastoralism, an observation in which current archaeological research in eastern Africa will no doubt rekindle interest. Atuot initially migrated into a territory that was inhabited primarily by iron workers and hunters who practiced a limited horticulture. Many of these people have been "absorbed" by Atuot and now speak this language. As a necessary consequence of this gradual process, additional peculiar usages have been incorporated into the Atuot lexicon.

The entire matter of the reconstruction of one or another "proto-form" of Nilotic is still in the early stages and when further research is completed in this area, social anthropologists may reap great benefits from the work of linguists. As I have hinted throughout this brief essay, the latter ought to be mindful at the same time of the nature of contemporary inter-ethnic relations among pastoral Sudanese Nilotes, especially as these are decidedly more fluid and dynamic than linguistic classification would imply. What I have attempted to outline in this essay is a mode of analysis which could eventually be of value both for historically minded linguists and anthropologists as well as for those whose interests are more decidedly related to the problems inherent in the understanding of Nilotic ethnology. A further point which I hope to have addressed in at least a partially satisfactory manner is that of the specific linguistic and cultural status of the people called Atuot, who do not think of themselves as Dinka and whose language - though clearly related to Dinka - is decidedly more akin to Nuer. Social anthropologists surely ought to be more mindful of the linguistic data and linguists, when appropriate, more sensitive to the fluid nature of the inter-ethnic relations in this region of the Southern Sudan. If either suggestion is even partially acknowledged by practicioners of these disciplines then the present minor contribution will have been of greater value than simply defining anew the linguistic and cultural status of the Atuot, or the Reel people.

Note

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Part two

Sahara and Sudan

Gerald M. Browne

Griffith's Old Nubian Lectionary

At the moment, our knowledge of Old Nubian rests primarily on four literary monuments: the Menas Legend, the Nicene Canons, the Stauros Text, and the Lectionary.[1] Although the new material from Qasr Ibrim and elsewhere will add considerably to our understanding of the language, it is doubtful whether it will ever replace in importance these four basic texts. It is therefore especially regrettable that one of them, the Lectionary, has never been properly edited.

F. Ll. Griffith did a generally commendable job in making available editions of all of the Old Nubian texts known to him, and his volume, *The Nubian Texts of the Christian Period*, which appeared in 1913 (see above, note 1), has long served as the basic corpus. But in working on the Lectionary, Griffith was surprisingly careless, and his published edition has actually hindered access to this important document.

Together with the Stauros Text, the Lectionary came to light early in this century in Cairo and was purchased by Karl Schmidt, who, in collaboration with Heinrich Schäfer, described the discovery in two papers in 1906 and 1907 respectively.[2] The Lectionary is lodged in the Deutsche Staatsbibliothek in Berlin (DDR), where it is inventoried as (Königliche Bibliothek) Ms. Orientalis Quarto 1019. It consists of 16 pages, numbered from 100 to 115, of what must have once been a rather long book. Many of the leaves are damaged, but the general content is clear: we have a series of extracts from the letters of St. Paul and from the Gospels. Although Schmidt and Schäfer published a few sample passages from the Lectionary in their articles referred to above (see note 2), its first and only edition was left to Griffith, and it appears, together with Griffith's reconstruction of the underlying Greek, on pp. 25 to 41 of *The Nubian Texts*. As Tafel 1 of his volume, Griffith presented a photograph of two of the better preserved pages of the Lectionary, pp. 106 and 109. Unfortunately, plates of the remaining pages were not included.

I first became aware of the deficiencies of Griffith's edition when I noted his annoying tendency not to indicate accurately the amount of text lost in lacunae. In contrast to the three other main documents in Old Nubian, the Lectionary is often considerably damaged, and the reader expects to be told something of the physical state of the manuscript in lacunose areas. It is less than helpful to read, for example, what Griffith prints as the first lines of page 114 (N.B. the small, suprascript numbers refer to the lines of the manuscript; the larger numbers aligned with Griffith's reconstruction of the Greek mark the beginning of the verses for the text in question [Matthew 2:6-8]):

[First line missing]

^{2} ⲓⲟ]ⲩⲇⲁⲓⲁ̣ ⲁ[.......
ὅστις ποιμανεῖ τὸν λαόν μου τὸν Ἰσραὴλ

.... ⲏ̇ⲣ^{3}ⲱⲇ]ⲏ ⲇⲟⲅⲁⲣ[^{4}..]ⲩⲛ[..
7 τότε Ἡρώδης λάθρα καλέσας τοὺς μάγους

.. ^{5}ⲧ]ⲁ̣ⲩⲟⲩⲕⲕⲁ[..
ἠκρίβωσεν παρ' αὐτῶν τὸν χρόνον τοῦ φαινομένου ἀστέρος

..]^{6}ⲉⲓⲧⲁⲣⲓ[..
8 καὶ πέμψας αὐτοὺς εἰς Βηθλεὲμ εἶπεν

..]ⲇⲟⲩ^{7}ⲣⲓⲕⲁ ⲡⲁⲇⲇⲁⲛⲛ̣[..
πορευθέντες ἐξετάσατε ἀκριβῶς περὶ τοῦ παιδίου

^{8}ⲉ̇ⲗⲉⲛⲛⲟⲛ ⳝⲡⲣ̄ⲧⲓ̣[....]^{9}ⲥⲱ̣
ἐπὰν δὲ εὕρητε ἀπαγγείλατέ μοι

[ⲁ]ⲓ̈ⲕⲉⲧⲁⲗ ⲕ̣ⲓ̣[.... ..]^{10}ⲉ[....
ὅπως κἀγὼ ἐλθὼν προσκυνήσω αὐτῷ

Here, except for the series of dots in line 2, there is little guidance as to the amount of text presumed missing. It is Griffith's reconstruction of the Greek, not the physical condition of the manuscript, which was responsible for his arrangement of the Nubian. With some effort, the reader can compute the approximate loss of material, but one expects to find the results of such computation already available in the edition. Even a cursory inspection reveals that line 8, with only four letters in the lacuna, is uncharacteristically short: the line has only 16 letters, ten less than the average. Further, in the same line, the word which elsewhere appears as ⲅⲡⲣⲧ- is here spelled with an initial ⳝ; this may be simply a misprint, since Griffith spells this occurrence of the word with a ⲅ in his Index (p. 90). But initial ⲅ and ⳝ interchange elsewhere in the corpus (see Zyhlarz §14.f), and so the discrepancy between Griffith's text and Index does nothing to allay our uneasiness about the reliability of his edition.

Further study convinced me that, as edited, the Lectionary presents some surprising specimens of Old Nubian. For example, to render the Greek of John 17:13 (ἵνα ἔχωσιν τὴν χαρὰν τὴν ἐμὴν πεπληρωμένην ἐν ἑαυτοῖς, 'in order that they may have my joy fulfilled in themselves'), the Nubian has, according to Griffith's text (108.13-14; I have added a literal translation):

ⲁⲛ ⲡⲓⲥⲕⲁⲛⲉ ⲕ[ⲓ]ⲣⲓⳝⲟⲕⲕⲁ̣ ⲧ̣ⲉ̣[ⲣ$\overset{?}{\text{ⲓ}}$ⲟ]ⲉ̣[ⲟⲩⲛ] ⲕ̣ⲟ̣ⲁⲛⲛ[ⲟ]ⲁ̂
my joy fulfilled because-of-them(selves) in-order-that-they

The concluding segment of this passage, ⲕ̣ⲟ̣ⲁⲛⲛ[ⲟ]ⲁ̂ is a third person plural of a structure corresponding to a final clause, and before it we expect a verb (cf. Zyhlarz §184 and the examples there cited). Instead, Griffith gives us a reading - largely restored - based on a postposition: ⲧ̣ⲉ̣[ⲣ$\overset{?}{\text{ⲓ}}$ⲟ]ⲉ̣[ⲟⲩⲛ]. This is composed of the third person plural pronoun ⲧⲉⲣ- and a postpositional complex -ⲗⲟ-ⲉⲟⲩⲛ, which have fused in accordance with Nubian phonology (Zyhlarz §9.r.2). Parallels (see Zyhlarz §230) suggest that ⲧⲉⲣⲓⲟⲉⲟⲩⲛ means 'because of them' or 'because of themselves' (Nubian need not mark reflexivity in pronouns: cf. the passage from the Menas Legend cited below), and as such it seems a strange rendition of ἐν ἑαυτοῖς, 'in themselves'. Presumably Griffith's dots and question mark signal his doubt about what he printed. The doubt is fully justified: anomalous syntax and odd semantics conspire to show that the reading and restoration cannot be correct.

Prompted by such considerations, I sought to obtain a set of photographs of the Lectionary from the Deutsche Staatsbibliothek, and I am especially grateful to its Director, Dr. K. Schubarth, who promptly had excellent photos prepared for my use.

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ⲁⲛ	ⲡⲓⲥⲕⲁⲛⲉ	ⲕ[ⲓ]ⲣⲓⳝⲟⲕⲕⲁ̣	ⲧ̣ⲉ̣[ⲣ$\overset{?}{ⲓ}$ⲟ]ϭ̣[ⲟⲩⲛ]	ⲕ̣ⲟ̣ⲁⲛⲛ[ⲟ]ⲁ̂
my	joy	fulfilled	because-of-them(selves)	in-order-that-they

The concluding segment of this passage, ⲕ̣ⲟ̣ⲁⲛⲛ[ⲟ]ⲁ̂ is a third person plural of a structure corresponding to a final clause, and before it we expect a verb (cf. Zyhlarz §184 and the examples there cited). Instead, Griffith gives us a reading - largely restored - based on a postposition: ⲧ̣ⲉ̣[ⲣ$\overset{?}{ⲓ}$ⲟ]ϭ̣[ⲟⲩⲛ]. This is composed of the third person plural pronoun ⲧⲉⲣ- and a postpositional complex -ⲗⲟ-ϭⲟⲩⲛ, which have fused in accordance with Nubian phonology (Zyhlarz §9.r.2). Parallels (see Zyhlarz §230) suggest that ⲧⲉⲣⲓⲟϭⲟⲩⲛ means 'because of them' or 'because of themselves' (Nubian need not mark reflexivity in pronouns: cf. the passage from the Menas Legend cited below), and as such it seems a strange rendition of ἐν ἑαυτοῖς, 'in themselves'. Presumably Griffith's dots and question mark signal his doubt about what he printed. The doubt is fully justified: anomalous syntax and odd semantics conspire to show that the reading and restoration cannot be correct.

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I should now like to return to the passage I discussed earlier, 108.13-14: ⲁⲛ ⲡⲓⲥⲕⲁⲛⲉ ⲕ[ⲓ]ⲣⲓⲊⲟⲕⲕⲁ̣ ⲧ̣ⲉ̣[ⲣ$\overset{?}{ⲓ}$ⲟ]ⲉ̣[ⲟⲩⲛ] ⲕ̣ⲟ̣ⲁⲛⲛ[ⲟ]ⲗ̂. Here, as I noted, a verbal desinence anomalously adheres to a postpositional complex. For the area in question, the Nubian is almost entirely restored, and what is not restored is dotted. In order to eliminate the structural problems in Griffith's text, I propose that we read and restore it as follows:

ⲁⲛ ⲡⲓⲥⲕⲁⲛⲉ ⲕ[ⲓ]ⲣⲓⲊⲟⲕⲕⲁ ⲧⲉ̣[ⲣⲓⲗ̂ ⲕⲟⲛ]ⲕⲟ̣ⲁⲛⲛ[ⲟ]ⲗ̂
my joy fulfilled in-them in-order-that-they-may-have
(-selves)

This seems to provide an adequate rendition of ἵνα ἔχωσιν τὴν χαρὰν τὴν ἐμὴν πεπληρωμένην ἐν ἑαυτοῖς. ⲧⲉ̣[ⲣⲓⲗ̂ is composed of the third person plural pronoun ⲧⲉⲣ- and the locative -ⲗⲗ (for the assimilation see Zyhlarz §9.r. 2). We have an analogous use in such expressions as that in the Menas Legend 3.1: ⲧⲁⲣⲓⲗ̂ ⲡⲉⲥⲥⲛⲁ 'she said in her(self)', where ⲧⲁⲣⲓⲗ̂ is the third person singular pronoun ⲧⲁⲣ- fused with -ⲗⲗ. Note that here and in the passage from the Lectionary, the pronoun may be used as a reflexive. The verb ⲕⲟⲛ- 'have' is amply attested even in the small corpus of Old Nubian; it has survived as kune in the Nobiin dialect of the modern language (cf. Griffith p. 104 s.v. ⲕⲟⲩⲛ). For a parallel to the expression as a whole, I refer to another passage in the Lectionary, 106.5-6, where John 16:33 (ἵνα ἐν ἐμοὶ εἰρήνην ἔχητε, 'in order that you may have peace in me') is translated as follows:

ⲧⲱⲕ̄ⲛⲛⲁⲩⲉ̂ⲕⲁ ⲁⲓ̈ⲗ̂ ⲕⲟⲛⲕⲟⲗ̂ⲗⲱ
peace in-me in-order-that-you-may-have (cf. Zyhlarz §340)

The similarities between the two passages are striking, and they strongly suggest that the revision, ⲧⲉ̣[ⲣⲓⲗ̂ ⲕⲟⲛ]ⲕⲟ̣ⲁⲛⲛ[ⲟ]ⲗ̂, is likely to be what the scribe wrote. Both have an object marked with -ⲕⲁ (ⲁⲛ ⲡⲓⲥⲕⲁⲛⲉ ⲕ[ⲓ]ⲣⲓⲊⲟⲕ-ⲕⲁ in the first, ⲧⲱⲕ̄ⲛⲛⲁⲩⲉ̂-ⲕⲁ in the second), both use -ⲗⲗ to render Greek ἐν (ⲧⲉ̣[ⲣⲓⲗ̂ and ⲁⲓ̈ⲗ̂, i.e. ⲁⲓ̈- [first person singular pronoun] fused with -ⲗⲗ: see Zyhlarz §11), and both employ the verb ⲕⲟⲛ- in a final construction (ⲕⲟⲛ]ⲕⲟ̣ⲁⲛⲛ[ⲟ]ⲗ̂ and ⲕⲟⲛⲕⲟⲗ̂ⲗⲱ).

In terms of paleography, what Griffith took as a doubtful ⲉ can also be a supraliteral stroke over the ⲗ in ⲧⲉ̣[ⲣⲓⲗ̂. The passage appears as follows in the manuscript (108.14):

It is easy to see why Griffith interpreted the ink as the upper part of a **6**. It can, however, just as well be a supraliteral mark. We expect a mark in such an environment: a vowel forming a syllable by itself is regularly equipped with a stroke of this kind - an orthographic feature which Old Nubian derived from Bohairic Coptic (see above, n. 3). The stroke has a similar shape elsewhere in the Lectionary; quite comparable is its appearance over the last letter of **ⲕⲟⲛ]ⲕⲟ̣ⲗⲛⲛ[ⲟ]ⲗ̂**; note also its use in **ⲗϊⲗ̂** in the parallel passage cited above. In short, there should be no objection to the passage as now revised. It is, at any rate, a decided improvement over what appears in the *editio princeps*.

I should further point out that my reading differs from Griffith's also in the case of dotted letters. Griffith not only used the dot to mark a letter which he could not guarantee *qua* reading; he also placed it under a letter which was damaged but still certain. In accordance with current editorial practice, I employ a dot only when I am doubtful about the reading of a letter.

There are numerous other passages in Griffith's edition of the Lectionary where the original reading is manifestly false, and the instances of demonstrable error are frequent enough fully to justify a new edition of the entire text.

Let me end on a note of caution. In working on Old Nubian, where the body of material is so small, an editor runs risks. If he attempts to remove one anomaly, he may unwittingly introduce another. He needs linguistic parallels drawn from the corpus; in their absence, imagination is a poor substitute. I hope that my forthcoming revision of the Lectionary will provide - not a definitive text - but at least a reasonably secure foundation to build upon as our knowledge of the language increases. At least if the editor presents his text as accurately as feasible, he will give others the opportunity to succeed where his parallels and ingenuity have failed.

NOTES

1. For the *editiones principes* see F. Ll. Griffith, *The Nubian Texts of the Christian Period* (Abhandlungen der Königlich Preussischen Akademie der Wissenschaften Jg. 1913, Phil.-hist. Classe, Nr. 8; Berlin). Except for the Lectionary, they were re-edited by E. Zyhlarz in his *Grundzüge der nubischen Grammatik im christlichen Frühmittelalter (Altnubisch)* (Abhandlungen für die Kunde des Morgenlandes 18.1; Leipzig 1928).

2. H. Schäfer und K. Schmidt, "Die ersten Bruchstücke christlicher Literatur

in altnubischer Sprache", and "Die altnubischen christlichen Handschriften der Königlichen Bibliothek zu Berlin", *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften,* phil.-hist. Classe, 8. November 1906, 774-785; and 20. Juni 1907, 602-613.

3. See my "Notes on Old Nubian", VIII, *The Bulletin of the American Society of Papyrologists* 18 (1981; forthcoming).

4. [Addendum (Januari 1981): the edition, which is now finished, has been accepted for publication in the series Papyrologica Castroctaviana (Barcelona/ Rome).]

R.C. Stevenson

Adjectives in Nyimang, with Special Reference to *k*- and *t*- Prefixes

1. INTRODUCTION

This paper is a preliminary note on some features of adjectives in Nyimang.[1] In particular it attempts to show, by comparison with other Nilo-Saharan languages, that initial k-, t- which appear in many Nyimang adjectives are in many instances "frozen" prefixes. Elsewhere in Nilo-Saharan they are to be found adjectivally in, *inter alia*, Moru-Ma'di, Bongo-Bagirmi and Saharan. Initial k-, t- (and l-) also occur in nouns (cf. Greenberg 1966:116 on "movable" k-). In addition, in the following pages, mention will be made of other adjectival affixes in Nyimang.

Nyimang adjectives partake of the nature of nouns and pronouns, with which they may be classed as "nominals". Among other common features they take the same case suffixes and, like nouns - and with a few similar exceptions - have no plural formation. There is, however, in Nyimang a "past participle" which shares some features with adjectives and others with verbs (see further note below).

References are also made to a language related to Nyimang which is spoken in the eastern part of Jebel Dair.[2] This has been known as "Afitti" but I now use the term "Dinik", an overall term which I have recently discovered.[3]

2. FORMS OF ADJECTIVES

For practical purposes, adjectives in Nyimang may be listed formally as follows:

(1) *Initial* k-, kw-, gw-:

e.g.	kàbàr[4]	'hot'
	kwɛsìl	'cold'
	gwö̀ɽè	'old'

(2) *Initial* t-, ṭ-:[5]

e.g.	tɛ̀gìlè	'red'
	ṭogora	'narrow'

(3) *Initial* **a-** *formative:* (Many of these can be shown to be derived from nouns or verbs)

(a) *Initial* **a-** *only:*

e.g.	**afɔ̀r**	'dry'	vb. fɔrà	'to be dry'
	aŋìl	'amusing'	vb. ŋìl	'to laugh'

(b) *Initial* **a-** *and suffix* **-ai, -ei, -i:**

e.g.	**amɔsɔliŋei**	'sesame-coloured'	n. mɔ̀sɔ̀l 'sesame'	(mɔ̀sɔ̀lìŋ 'grain of sesame')
	aláwài	'green'	n. láwà 'grass'	
	abwɛsì	'brown, yellow'		

(4) *Without discernible affix:*

e.g.	**ḍíà**	'big, large'
	nawɔr	'sterile'
	sɔ̀lɔ̀	'lazy'

(5) *Reduplicated forms:*

e.g.	**bibilè**	'different'
	ḍiḍiŋ	'closely packed, thick'
	fɔfɔr	'straight, direct'

To this list may be added *ideophones*, which are often comparable with adjectives elsewhere in Nilo-Saharan. Many are also reduplicated.

e.g.	**kwɛḍ̀r ḍiɽ(i)ro**	'very strong'
	tɛbiò sùsùl	'deep black'

Finally, one may add adjectives embodying *suffixes*. These will be treated in a separate section below.

Note 1: The forms in **a-** (such as **aŋìl** 'amusing, funny' - see 3.a above) are adjectives with all the characteristics of adjectives, e.g. they have no plural forms, they take case suffixes, and require the verb 'to be' (**nɛ̀** pl. **nɛ̀dì**) in predicative constructions. However, in some cases one must be careful to distinguish them from verb forms of the same root when the latter are preceded by a present tense particle **a** (not to be confused with the adjective formative **a-**). The verb forms have plurals in -d- and do not take case suffixes or require the verb 'to be'. The following examples will illustrate this. (The verb particle **a** is written disjunctively; it may be replaced by **ka** for emphasis and in certain other contexts.) Compare:

Adjective aŋìl 'amusing, funny'

widὲŋ nɔ̀ aŋìl nὲ	'This boy is funny'
(like widὲŋ nɔ̀ kεdìŋ nὲ	'This boy is small')
ḍriŋ nɔ̀ aŋìl nὲdì	'These boys are funny'
widὲŋ aŋilàu kadài	'Go to the funny boy' (Locative)

Verb ŋìl 'to laugh'

widὲŋ nɔ̀ a ŋìl	'This boy is laughing'
(like widὲŋ nɔ̀ a kìn	'This boy is listening')
ḍriŋ nɔ̀ a ŋìldì	'These boys are laughing'

Note 2: Verbs have a "past participle" which shares some features of the verb and the adjective. It is formed from the first stem of the verb and is either without suffix (e.g. tàm 'eaten', bὲr 'broken (of pot, bowl)', sùŋ 'born'), ends in -u (e.g. fεdù 'found') or may have optionally either form (e.g. ḍὲm or ḍεmù 'broken (of stick)'). It has the usual plural formation in -d- (e.g. suŋudù, fεdidù) and can be preceded by the usual verbal particles, but like an adjective it takes case suffixes and requires the verb 'to be' (nὲ) in predicative constructions:

kwìr a bὲr nὲ	'The pot is broken'
kwìr a bεràu bì	'Put it in the broken pot' (Locative -au)

The verbal passive in -ei also takes case suffixes but otherwise behaves like other main verb forms.

Table of points for comparison (+:- present/absent) between Adjective, Past Participle, Main Verb and Passive

	Adj.	*P.P.*	*Main Verb*	*Passive*
nε ('to be') in Predication	+	+	-	-
Verb type plural in -d-	-	+	+	+
Case suffixes	+	+	-	+
Present tense particle a	-	+	+	+

3. INITIAL *k-* AND *t-*

(1) In some cases initial k-, t- can be shown to be part of the root and not affixial. This will be apparent from the comparative list at the end. Examples are:

kεɽù	'good'

kà(g)àr	'bitter'
tatar	(Reduplicated) 'straight'
(kafɛl) ṭɛṭɛr (and **ṭɛṭɛl**)	Ideophone 'clean; clear (of water)'

(2) Internal evidence within Nyimang or comparison with the related Dinik demonstrates the affixial or 'movable' nature of k- and t- in a number of instances.

e.g. **kásɛ̂l**	'male'	cf.	**sɛ̂l**	'penis'	
			asɛ̂l	'my husband'	
			nyɛsɛ̂l	'your husband'	etc.
kafɔ̀r	'empty'	cf.	**afɔ̀r**	'dry'	
			fɔrà	'to be dry'	
kanyɛ̀r	'new'	cf. Dinik	**nyirì**		
kɛsɛ̀ny	'thin'	cf. Dinik	**sónyú**		
tɛ̀gìlè	'red'	cf. Dinik	**gìlà**		

Note that in some cases Dinik shares the initial k- or t- with Nyimang but in others does not:

Nyimang	*Dinik*	
tabár	**tabərá**	'white'
kwulìl	**kwɔ́lŋgà**	'cold'
kanyɛ̀r	**nyirì**	'new'
(and others above)		

(3) But above all the affixial nature of k- and t- can be shown by comparison with other Nilo-Saharan languages. A few examples are cited here and others will be found in the list at the end.

kàbàr	'hot	cf. Murle **abur**
		Shilluk **mɔr**
		Temein **waaraŋ**
kanyɛ̀r	'new'	cf. Dinka **nyal**
(Dinik: **nyirì**)		Shilluk **ny(i)an**, Acholi **nyɪɛn**
		Temein **n(ḍ)iŋan**
tabár	'white'	cf. Dinka **(ma)bior**
(Dinik: **tabərá**)		Nuer **bor, buoär**
		Murle **fɔɔr**
		Daju (Sila) **fafaara**
		(Liguri) **pabal**
		Kanuri **bul**

(4) Various interpretations have been given of **k-** in Nilo-Saharan languages: Tucker (1940:286) attributes **k-** in Moru-Ma'di adjectives to a verbal form. Santandrea (1970:86) thinks that in Yulu it represents the relative particle **ke** (p. 96).

Greenberg (1966:116), from examples in nouns and adjectives, suggests that it was originally a feminine definite indicator, but calls for further investigation of this hypothesis.

I have no further hypothesis to suggest at the present stage, but am merely attempting to assemble some data relating to the occurrence of **k-** (and **t-**) in Nyimang adjectives in comparison with its occurrence/non-occurrence in other Nilo-Saharan languages. Only when further data are systematically studied in nouns as well as adjectives throughout Nilo-Saharan will it be possible to attempt to reach some conclusions. The appearance of **k-** in adjectives and nouns is sporadic throughout Nilo-Saharan. Greenberg (1966:132, somewhat contrary to his p. 116) suggests that "movable" **k-** in Saharan may be connected with the nominal derivative k- cited in his para. 35 on pp. 116, 132, but mentions only nouns. Note, however, the appearance of **k-** in many adjectives in Kanuri (examples from Lukas 1937):

kəjî	'sweet'	Cf.	**nə́jì**	'sweetness'
kərê	'generous'		**nə́rê**	'generosity'

and many others, including loan words such as:

kəléfɑ	'healthy'	Cf.	**nə́lefɑ̀**	'health'

(from Arabic **al-ˤāfia**)

4. SUFFIXES

In Nyimang adjectival forms note must also be taken of certain actual or potential suffixes, i.e. active or "frozen":

(1) -iŋ *forming diminutives in adjectives (and nouns)*

This is an active suffix, particularly in nouns (to denote both 'small-sized' and 'young of'), e.g. **gìl** 'dog', **gilìŋ** 'small dog' or 'puppy', but also occasionally in adjectives, e.g. **kɛḍìŋ** 'small', **kɛḍiŋìŋ** 'very small'. However, it has remained attached to some basic forms of adjectives and nouns as a 'frozen' suffix, both in Nyimang and elsewhere in Nilo-Saharan.

tutunùŋ	'half-blind, groping'
kɛḍìŋ	'small' as cited above
wudɛ̀ŋ~widɛ̀ŋ	'child, small boy'

ḍriŋ	'children' (cf. Lotuho **aduri**)

Note: For this suffix, compare roots for 'child, son':

Nyimang ŋɛ́ Dinik ŋwá
(Dinik uses ŋwá as a diminutive, e.g. wùlɛ̀l ŋwá 'small dog', 'puppy')

Moru-Ma'di	ŋgwa (and Diminutive suffix -ŋgwa,-ŋwa)
Bagirmi	ŋwono, pl. ŋange
Murle	ŋɛɛr
Bari	ŋurɔ, pl. ŋwajik
Lotuho	ɔlɔ-ŋɛu (fem. ɔ-ŋɛu) 'firstborn child'
Maiak	ɛŋiyɛɛk

(2) **-i** *active formative (adjectives from nouns, verbs)*

luì	'shady'	n. **lù** 'shade, shadow'
ɛlɛlì	'poisonous'	n. **ɛlɛl** 'poison'
ŋilì	'amusing'	vb. **ŋìl** 'to laugh'
	(cf. **aŋìl** cited earlier)	

(3) **-ɛr** is a common suffix in nouns (generally deverbative) denoting agent or instrument, utensil, etc.

iliŋɛ̀r	'index finger'	vb. **ilìŋ**	'to point'
ḍɔ́nyɛ̀r	'seat'	vb. **ḍɔ̀ny**	'to sit'

but it may be noted also in:

ṭɛḍimɛ̀r	'right (hand, side)'	(= *ṭɛḍim + -ɛr)

However, **-ɛr** belongs to the root in, for example, **kanyɛ̀r** 'new'. See the comparative list on these two words.

(4) **-ḍo~-ro** is probably a "frozen" suffix.

kusuḍò (and **kusurò**) 'bad' (Dinik: kɛjáá)
cf. Moru-Ma'di **kɔzɪ(-rʊ)** where **rʊ** = 'body' (Tucker 1940:284)
Kreish **gosidi**

(5) **-mɛ, -me, -ma** also appears to be a "frozen" suffix,

aɽimɛ̀ 'angry, sullen, sad' Cf. Bari **wɔr-an** 'to be angry'
ḍigirma 'blunt' Cf. Luo **(ma)dik**, Temein **dukulu**

(The Kanuri suffixes **-mi, -ma** in Lukas 1937:9-11 seem to be irrelevant for comparison.)

(6) **-fá** (from **fa** 'not') is used in the formation of some adjectives (note tonal difference),

ajɛgifá	'not saddled; naked, bare'	**ajɛ̀g** = saddled, clothed; flowering, in bloom
amiḍifá	'ugly; badly done'	**amiláŋ** = 'beautiful; well done' (from vb. **milàŋ**)

5. COMPARATIVE LIST[6]

Nyimang	*Cf.*
aḍiáŋ 'fat' (1) (Dinik: **dúnyà**) (See also **káḍɔ̀ŋ** 'much, many'; **ḍíà** 'big')	Shilluk, Acholi **duoŋ** 'big' Luo **(ma)duoŋ** 'big' Mabaan **dwɔŋ(in)** (pl.) 'big' Daju (Liguri) **mödöŋ**
afɛlɛ̀ 'light (in weight)'	Dinka **puɔl**; Nuer **pwɔɔl** Mabaan **pwɔr(an)** Temein **pul**; Teisei **yɛhalhalik** Moru-Ma'di: Avukaya (Ojila) **fara'ba**, Lugbara **pɛrɛpɛrɛ** Murle **vɔlvɔl** v.i. Gaam (= Ingessana) **kɔfɔl-** Songhai (Gao) **felli** Bagirmi **opte**
agwɔɽɔ̀ŋ 'round (circular)' (**gɛɽɛŋ**, **gɛgɛɽɛŋ** 'a circle') (Dinik: **kááró**)	Dinka **roŋroŋ** Acholi **luŋo** 'to make round', **luŋŋɛ** 'to be round' Lotuho **-luŋa** But note: Nubian (Dongola) **gɛdɛ** 'a circle', **giridɛbul** 'circular' Murle **gorgor**, **gudgud** 'round, spherical'
akwoḍɔ̀ŋ 'bent, crooked' (**kwuḍɛ̀ŋ** 'to bend' v.t.)	Bari **(lo-)kolo'** 'curved', **ko'do'-yu**, **kolo'yu** 'to make curved' Lotuho **kudo** 'curved', **kud-ok** 'to make curved' Maasai **a-olol** v.t., **a-ololo** v.i. 'to bend'

aláwài 'green' (**láwà** 'grass')	Moru **luru** (probably from obsolete stem for 'grass'); Mangbetu **luɛ** 'grass' (See also Greenberg 1966:100, 121, 139, under 'grass')
anyuài 'full' (vb. 'to fill' **anyuài/nyuaiɛ̀**) (Dinik: **ɛwɛɛn**)	Nubian (Kadaru) **inyi/inyɛ** 'to fill', (Dilling) **eny** 'to become full'
áràn~áràŋ 'near'	Ma'di (Lokai) **ɪrɛ** Lotuho **ɔlyaxaɪ** Kanuri **kɑrəŋgən**
awalài 'boiling' (v.t. **walài**) (Dinik: **gúgulàl**, 'boiling')	Shilluk **wal**, **waalo** vb. Bari **walala** v.i. Teso **(ai-)waliwal** v.i.; Luo **walɔ** v.i. Nubian (Mahas) **wal** vb Murle **malac** v.i.
ḍíâ 'big' (Dinik: **ḍúbə̀**) (See also **aḍiáŋ** 'fat'; **káḍɔ̀ŋ** 'much, many')	Dinka, Acholi **dit** Nuer **diid**; Mabaan **tol(an)** (sg.) Tama **duut** (pl. **duluŋ**) Nubian (Dongola) **dūl** Bari **dʊmaˀ** Nera (= Barya) **dub(ko)**
gwö̀ɽè 'old' (of people and things) (Dinik: **gwɔrtáá** - of people, **ɔ́rɛ** - of things)	Temein **nḍorun** (of things) Teisei **oriŋ** (of things) Nubian (Dongola) **dūl**, **duru** (of people) **kurus** (of things) (Kadaru) **ţuɽa** (of people, things) (Midob) **tori** (of people, fem.) Ma'di **dzali-gɔ** (of people) Lugbara **dula** (of things) Lulu'ba **kɔlandi** (of things) Shilluk **wale** (warr) 'old age' Kanuri **cɑri** 'old man' (Note also **tii**root 'old, to be old' e.g. Temein **tii**, Fur **tɔi**, Acholi vb. **tii**, adj. **mutii**)

kàbàr 'hot'	Murle **abur** Dinka **mör** 'tepid'; Shilluk **mɔr** 'warm' Nuer **mɔrɛ** 'to be or to make warm', **mormɔr** 'lukewarm' Luo **(ma)mormor** 'warm' Temein **waaraŋ** ; Teisei **arraŋ** Maasai **a-ɪrowua** 'to be hot'
kàḍàr 'sour' (Note also **kà(g)àr** 'bitter, below')	Temein **nṭiḍɛr** 'bitter' Bari **pötwör** 'bitter Lotuho **dwä**; Teso **-dwar** 'bitter' Turkana **adwaran/adwarak** 'bitter' Maasai **a-dua** 'to be sour (or bitter)' Moru **äträträ**; Keliko **dradra** Bongo **ta**; Baka **ata**
káḍɔ̀ŋ 'much, many' (See also **aḍiáŋ** 'fat'; **ḍı́à** 'big')	Moru (Miza) **du** Baka **tuḍu** Mabaan **coŋ-**
kafɔ̀r 'empty; not flowering (of plants)' (**afɔ̀r** 'dry' **fwèr** 'to dry up' v.i.) (Dinik; **fəráfərà** 'dry')	Acholi **twɔɔ furfurfur** 'to dry off (of land)' Lotuho **fɔrɔyɔxɔ tuäˀtuäˀ** (same) Fur **futɔ** 'dry, empty' (if not from Arabic **fāḍī**) ? cf. also: Nubian (Dongola) **būd** 'bare ground, esp. round house(s)'; Murle **vɔlɔŋ** 'empty'; Masalit **fɛrɛˀɛ (~fɛrɛyɛ)** 'dry, empty'; Gaam (= Ingessana) **fuul** 'empty'; Kanuri **hɑrŋin, hɑrjin** 'to dry up' v.i.
kà(g)àr 'bitter' (Note also **kàḍàr** 'sour' above) (Dinik: **kərrṭà**)	Tama **kuri** Dinka, Shilluk **kec**; Nuer, Acholi **kɛc** Nubian (Midob) **kötte** Longarim **akate** 'to be bitter' Didinga **xaxat** 'to be bitter' Songhai (Gao) **hotta** Kanembu **kuotu**; Kanuri **kuttu** 'disagreeable, unpleasant, bad, bitter Kara **kala** 'sour'; Bagirmi **cale** 'sour'

kanyɛ̀r 'new' (Dinik: ŋyirì)	Dinka ŋyal Shilluk ny(i)an; Acholi nyɪɛn Lango nyiɛn; Luo (mà)nyɪɛn Temein n(ḍ)iŋan; Teisei ŋaŋ Masalit ŋwɔndi
kâr 'female' (kɛ̂r 'woman" (Dinik: kíri 'woman; female, adj.')	Nubian (Dongola) karrɪ Daju (Darfur, Sila) wure 'woman' (Shatt) ux 'woman' Kipsigis kaorkao 'woman' Ma'di, Logo -zi Baka kara 'woman' Kanuri kurkuri Daza arɪɪ^{h} 'woman'
kásɛ̂l 'male' (sɛ̂l 'penis' asɛ̂l 'my husband' nyɛsɛ̂l 'your husband' anɛsɛ̂l 'her husband')	Dinka, Nuer, Shilluk cul 'penis' Gaam (= Ingeassana dul 'penis' Kanuri ŋgəɽi 'penis' Murle kuul 'tail, penis'
kɛḍìŋ 'small' (Dinik: kíccà)	Moru (Miza etc.) gɪɽɪ-ŋwa, (-ägi) ɪ'dɪ-ŋgwa Lulu'ba kɛdi Dinka thiin; Shilluk thin Luo (ma)tɪn; Acholi (ma)tin Bari (lɔ)'dɪt, Lotuho mʋta Maasai ɔtɪ (fem. kɪtɪ) Daju (Liguri) ṭɛṭɛŋɔs Nera (= Barya) šiːn-; Murle tɔny Fur iti (See also Greenberg 1966:104, 145 'small')
kɛɽù 'good' (Dinik: kwɔnyígɛ̀)	Nubian (Dongola) gɛn, (Kadaru) kɛn Moru (Miza) kadʋ, (Kediru) kado-ro (-ändri) andi; Kreish gozo Kara (Koyo dial.) ŋgɔle Lese ŋgela, Bagirmi ŋgɪla Bari kwelen 'beauty' Kanuri ŋgəlɑ

kɛsɛ̀ny 'thin' (Dinik: sónyú)	Teso -senyit Lotuho ixany Acholi jɔny 'to be thin, weak' Luo jɔny 'to be stiff, tired' Shilluk jɪŋ 'to be stiff' Nubian (Dongola) ɛsɛ (vb. ɛs-an- 'to become thin') Teisei ejinyila ; Bagirmi saŋa
kisaŋ 'left (hand, side)'	Bari kadɔŋɛ; Lotuho ɛxɔrrɔŋ Maasai kedianyɛ Teso (ko)kediany; Turkana -kedieny Tama kujuŋur
kusuḍò~kusurò 'bad' (Dinik: kɛjáá)	Old Nubian akossi Nubian (Kenuzi) uːs, kos Nera (= Barya) koš(ko) Moru (Miza etc.) kɔzɪ(-ru), (-ändri) ɔnzɪ Yulu kasi (of persons only) Bagirmi kösu; Kaba kasu; Kreish gosidi Berta zu; Gulai ose
kwɛ́rɛ̀n 'all' (Dinik: kwuḍutum)	Nubian (Dair) tuaŋ, (Midob) tömma Mekan udama; Lotuho 'daŋ; Turkana daaŋ Kunama tumma; Maba dum Moru (Miza) tʃ^{w}eni, (-ändri) tsɔnɪ, ('Bälimba) sɔnɪ Kanuri sɑmmɑ
kwɛsìl 'cold (1) (sìl 'fresh')	Temein njulun; Teisei anyɔl Baka shela 'wind', shele 'wet' (cf. also in Kadugli-Krongo, e.g. Katcha ejɔlɔ)
kwɛsìr 'dirty'	Dinka cuɔl 'to be dirty'; Luo (mo)cido Acholi col 'dirty', cilo 'dirt' Nubian (Debri) ʃirri 'brown, dirty' Teso a-culokinet 'spot (of dirt), stain'

kanyɛ̀r 'new' (Dinik: nyirì)	Dinka nyal Shilluk ny(i)an; Acholi nyɪɛn Lango nyiɛn; Luo (mȧ)nyɪɛn Temein n(ḍ)iŋan; Teisei ŋaŋ Masalit ŋwɔndi
kâr 'female' (kɛ̂r 'woman" (Dinik: kíri 'woman; female, adj.')	Nubian (Dongola) karrɪ Daju (Darfur, Sila) wure 'woman' (Shatt) ux 'woman' Kipsigis kaorkao 'woman' Ma'di, Logo -zi Baka kara 'woman' Kanuri kurkuri Daza arɪɪ^{h} 'woman'
kásɛ̂l 'male' (sɛ̂l 'penis' asɛ̂l 'my husband' nyɛsɛ̂l 'your husband' anɛsɛ̂l 'her husband')	Dinka, Nuer, Shilluk cul 'penis' Gaam (= Ingeassana dul 'penis' Kanuri ŋgəɽi 'penis' Murle kuul 'tail, penis'
kɛḍìŋ 'small' (Dinik: kíccà)	Moru (Miza etc.) gɪɽɪ-ŋwa, (-ägi) ɪ'dɪ-ŋgwa Lulu'ba kɛdi Dinka thiin; Shilluk thin Luo (ma)tɪn; Acholi (ma)tin Bari (lɔ)'dɪt, Lotuho mʊta Maasai ɔtɪ (fem. kɪtɪ) Daju (Liguri) ṭɛṭɛŋɔs Nera (= Barya) šiːn-; Murle tɔny Fur iti (See also Greenberg 1966:104, 145 'small')
kɛɽù 'good' (Dinik: kwɔnyígɛ̀)	Nubian (Dongola) gɛn, (Kadaru) kɛn Moru (Miza) kadʊ, (Kediru) kado-ro (-ändri) andi; Kreish gozo Kara (Koyo dial.) ŋgɔle Lese ŋgela, Bagirmi ŋgɪla Bari kwelen 'beauty' Kanuri ŋgəlɑ

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kwír 'taboo, forbidden'	Acholi kwer 'to be forbidden, taboo' Bari rʊ(an) (same) Lotuho dwä (same) Luo mɔkwɛr
kwɔɽɔ 'fat' (2)	Shilluk ɔr, ɔrɔ, rɔr 'to be fat' Bagirmi ere 'thick-set', ndere 'thick'
kwɔsôu 'smelly, stinking' (Dinik: dusá)	Nubian (Dongola) siɛ 'to stink', (Kadaru, Debri) iʃidu 'bad smell' Moru (Miza) tägyi, (-ägi) tadzi, (Wa'di) kädzi, (-ändri) ädzi 'to smell' v.i.
kwulìl 'cold' (2) (Dinik: kwɔ́lŋgà)	Murle lal 'to be cold' Dinka lir 'cold, cool' Bari lɪlɪk v.t. & adj.; Lotuho ɪlɪk vb. Teso -lilim Moru ki'dɪ, ɪ'dwi, etc. 'cold', ɔlɪ 'wind' Bagirmi ulu 'cold', lele 'wind' Bongo kul; Kara kili Bongo hilili 'wind' Yulu, Kara lili 'wind'; Kenga kuulu wind' Fur lula 'cold', dili 'winter season' Zilmamu lale 'cold (of air)' Gaam (= Ingessana) əil-
sâu 'far' (Dinik: kícca)	Moru (Miza) zɔ (and lɔɔzɔ, laza, etc) Lendu ɗa Bari pajɔˀ (*NB* p- in other adjectives) jɔl(an) 'to be lọng' lɔ-jɔˀ (fem. na-jɔˀ) 'long, tall' Mbai seĩ
sɛ̀ɽɛ̀ 'short'	Nubian (Kadaru) ʃɛɽɛndu, (Dilling) šere, (Kwashi) ʃɛrrɛ Moru (Kediru, -ägi, -ändri) dʒuɽu Mabaan ḍuul(an) Gaam (= Ingessana) duur

sɔ̀lɔ̀ 'lazy'	Maasai ta-ʃal-ai/ta-ʃal-a 'lazy' a-ʃal 'to be lazy, weak' Kanuri sulwai
sùsùl Ideophone of 'black', 'black': e.g. tɛbiò sùsùl 'very black, deep black' (Dinik: tibià cùcùl)	Dinka col; Acholi cɔl Luo dicɔl (fem.) Daju (Liguri, Shatt) 'jul (Darfur) 'jɪl, (Sila) 'jiila Murle koli; Kara tällä; Bagirmi ili
tabár 'white' (and Ideophone fɛfɛr) (Dinik: tabərá)	Dinka (ma)bior; Nuer bor, buoär Lotuho bwor Maasai a-ɪbɔr(r) 'to be white' Murle fɔɔr Daju (Sila) fafaara; (Liguri) pabal Kanuri bul
tàijɔ̀ 'raw'	Maasai a-jɔn 'to be raw' Dinka toc 'green, raw; the "toich"' And cf. roots for 'green', e.g.: Nubian (Dongola) dɛssɛ, (Kadaru) tɛjjɛ, (Midob) tesse Daju (Shatt) tec
tɛ̀gìlè 'red' (Dinik: gìlà)	Nubian (Dongola) gɛɛlɛ, (Dilling, Kadaru) kɛllɛ (Midob, Birged) keele Nera (= Barya) ʃol(ko) [ʃɔl-] Koma (Buldiit) kelli; Mursi gɔlọnyi (Cf. Greenberg 1966:96-7, 118, 135 'blood (1)')
tɔŋɔdù 'blind' (Dinik: tɔ́ndɔ̀)	Lotuho ŋɔdɔ 'to be blind' Bari mo'doke Teso -mudukana/-mudukaka Maasai mọdooni/modook Bongo ngu'du Nubian (Dongola) duŋgur (Kadaru) ṭunḍu (Midob) tuŋŋur

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kwɔsoû 'smelly, stinking' (Dinik: dusá)	Nubian (Dongola) siɛ 'to stink', (Kadaru, Debri) iʃidu 'bad smell' Moru (Miza) tägyi, (-ägi) tadzi, (Wa'di) kädzi, (-ändri) ädzi 'to smell' v.i.
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tosù 'thick'	Lotuho **irosi** 'to be thick'
	(**nerosi** 'thickness')
	Ma'di (Pandikeri) **luswe**
	Lugbara **osɛ(-ru)** 'fat'
tówuɽù 'long'	Dinka **baar/bar**; Nuer **bäär/bär**
	Acholi, Luo **(ma)bor**
	Shilluk **bar, bɔr**
	Murle **wun**
tatar 'straight'	Acholi, Luo **tɪr**
	Shilluk **athiro**
	Maasai **a-itoriori** 'to be straight'
ṭɛḍimɛ̀r 'right (hand, side)'	Bari **(lʊ)tatɛn**
	Maasai **tatɛnɛ**; Teso **(ko)teten**
	Lugbara, Ma'di **anda**
	Kara ('Bu'bu) **(ne)nanda**
	Murle **arɔn**
	Dinka **cuec**; Shilluk **kyej(i)**
(kafel) ṭɛṭɛr~ṭɛṭɛl Ideophone 'clean; clear (of water)'	Shilluk **til** 'clear'
	Lotuho **libo tilä tilä** 'clean or clear (of water)'
	Cf. Teso **(ai-)la** 'to be clean'
	(ai-)tala(un) 'to clean'
ṭogora 'narrow'	Dinka **akoric** (**kor** 'small' + Loc. **-ic**)
	Nubian (Dongola) **takkar**
	Teisei **odogola'** 'short'
	Moru (Miza) **nyagʊra** 'short'
	Kanuri **kori** 'short'
	Maasai **rɔnkai** 'thin, narrow'

NOTES

1. Nyimang (own name of people = **ama**, of language = **amadu wada**), classed as a member of the Eastern Sudanic branch of his Chari-Nile section of Nilo-Saharan by Greenberg, is spoken in the Nyimang and Mandal hills of the Nuba Mountains, west of Dilling in Southern Kordofan Province, Democratic Republic of Sudan. There is no recent accurate estimate of the number of speakers, but it is probably upwards of 60,000. For some information on the language see Stevenson 1956-57, Tucker and Bryan 1966.

2. In the northern part of the Nuba Mountains area, south of Rahad and Umm Ruwaba.

3. "Afitti" is the name of the main clan section which, together with other section names such as "Ditti" and "Unietti", is in wide general use (see Stevenson 1956-57, 41: 107-8). However, speakers informed me in 1977 that the term "Dinik", though not commonly used because people prefer the section names, is the acceptable term for the people as a whole.

4. Nyimang and Dinik possess three phonemic level tones marked here ´ high, ` low, mid (unmarked), and a falling tone marked ^.

5. For Nyimang and Dinik, in this paper **t** and **d** are dental stops, **ṭ** and **ḍ** are alveolar-retroflex stops. In Nyimang **s** + **i**, **e**, **ɛ** = **ʃi**, **ʃe**, **ʃɛ**.

6. I am by no means suggesting that all the forms cited are cognates, but that many are at least worthy of investigation. Citations from Nyimang, Dinik, Temein, Teisei (abbreviated here for "Teisei-um-Danab"), Daju, Nubian (Kadaru, Debri), Mabaan and Masalit are from my own data. Citations from Nubian (Midob) are from research done by Dr. Herman Bell and myself in Khartoum. Those from other languages are taken fron existing grammars and lists and, except for a few small modifications, are cited in the orthography used in them. However, except for Nyimang and Dinik, I have not included tone-marking. Dinik equivalents are included only when they are probable or possible cognates. Unglossed items have the same meaning as the Nyimang head-word.

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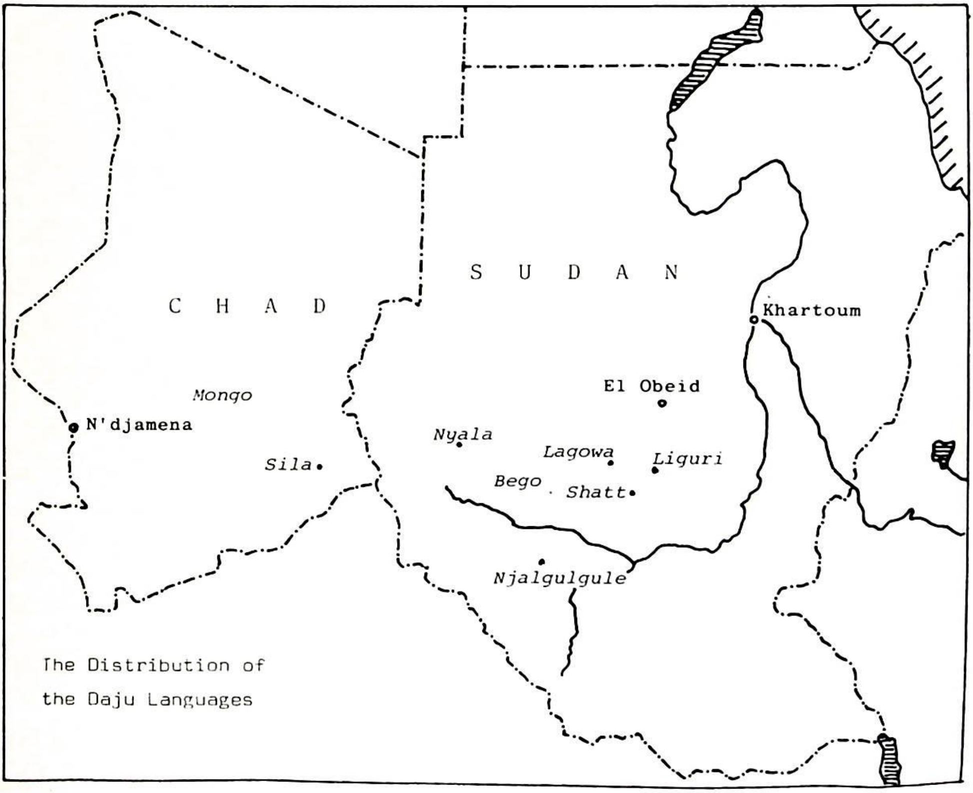
Robin Thelwall

Lexicostatistical Subgrouping and Lexical Reconstrucion of the Daju Group

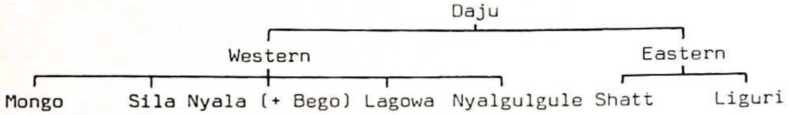
1. INTRODUCTION

The Daju Group consists of eight geographically distinct sections: Daju of Dar Dadjo (Mongo), Daju of Dar Sila - both based in Chad; Daju of Dar Fur (Nyala), Bego, Daju of western Kordofan (Lagowa), Njalgulgule, Shatt and Liguri. Their central locations are given on the map below. The Shatt of the Daju Group should not be confused with other groups of the same name in Bahr el Ghazal and Dar Fur (Stevenson 1956-57, 40:111f.).



The Distribution of the Daju Languages

Stevenson (1956-57, 40:112) has sub-classified the group as follows.



Greenberg (1966) has classified Daju within the Eastern Sudanic subgroup of Nilo-Saharan. Though the serious study of Daju commenced with Nachtigal during his travels in Wadai and Darfur in 1870-74 (Tucker and Bryan 1956:187), only brief vocabularies have been published by the MacDiarmids (1931) on Lagowa, Shatt and Liguri; MacMichael (1920) on Sila, Nyala and Bego; Santandrea (1948) on Bego, Njalgulgule, Shatt and Liguri; Jungraithmayr (1978) on Mongo, Sila and Nyala; and a grammatical summary appears in Tucker and Bryan (1966:231-42) based primarily on manuscript data of R.C. Stevenson's with a preponderance of examples from Shatt.

The present analysis is based on a corpus collected on Sila, Nyala, Lagowa (Nyukri), Shatt (Damam) and Liguri (Teisei Abd es Salaam - a village west of Jebel Liguri), between 1966 and 1974. A full presentation of the data will appear in Thelwall 1981.

2. SUBCLASSIFICATION

In order to put the subclassification of the Daju group on a systematic basis a lexicostatistic analysis was carried out on the above five members, using both a 100 item list (Bender 1976) and a 210 item list (Schadeberg 1975). For wider comparative purposes, a set of sixteen other languages covering other Eastern Sudanic and Berta languages were included in the 100 item list analysis (see also Thelwall, forthcoming). The results of the similarity judgements are given in Fig. 1. From the similarity matrix, cluster analyses were carried out which are presented as dendrograms in Figs. 2-6. It will be noted that Nearest Neighbour analysis puts Shatt closer to Sila, Nyala, Lagowa than to Liguri, while Furthest Neighbour analysis reverses the relationship. The other three analyses which are all different types of averaging give a three way split at the highest node of the Daju subgroup. These inconsistencies point to a problem that will have to be resolved. What factors lead Shatt to be classified variously with Liguri, with the Western group (Sila, Nyala and Lagowa) and as a separate branch? On the basis of the lexicostatistic measures at least it is not difficult to see how the different subclassifications arise. The highest count with Shatt is 66.7 with Lagowa (the nearest to the west), while it gives 62.2

Figure 1: *Similarity Matrix of Selected Eastern Sudanic and Berta Languages* based on cognate judgements for 100 item list (Bender 1976)

n varies between 95-100

Meidob																						
51.1	Birgid																					
46.2	60.2	Kadaru																				
44.6	57.8	86.8	Debri																			
40.2	49.5	56.0	56.5	Dongolawi																		
32.6	36.6	43.8	40.0	67.0	Nobiin																	
20.4	22.5	22.5	23.6	24.7	19.6	Tama																
8.2	9.5	8.9	7.6	7.1	9.4	10.9	Liguri															
7.2	8.4	5.6	5.4	8.2	8.3	13.0	64.3	Shatt														
7.2	5.3	6.7	7.6	6.1	8.3	12.0	60.2	66.7	Lagowa													
9.3	8.4	6.6	5.4	5.1	7.2	15.1	56.1	62.2	82.7	Nyala												
9.7	7.6	6.7	7.8	5.3	7.5	12.4	57.4	60.0	73.7	74.7	Sila											
9.8	10.1	11.8	12.8	16.3	19.8	19.1	9.7	12.0	12.0	10.9	11.4	Nyimang										
11.1	11.5	10.8	10.7	16.7	14.4	14.9	14.3	15.6	15.6	13.3	16.3	59.3	Afitti									
8.2	9.5	6.6	5.4	7.1	8.3	6.5	8.2	7.1	11.2	11.2	10.6	21.7	22.2	Temein								
9.2	8.3	6.6	7.5	9.1	8.2	10.8	5.1	5.1	7.1	7.1	8.4	22.6	19.8	66.7	Keiga							
11.3	9.5	9.9	10.8	10.2	8.3	12.9	5.1	5.1	7.1	6.1	8.5	18.5	18.9	56.6	78.8	Teisei						
3.1	5.2	2.2	2.2	5.1	8.2	8.6	12.1	12.1	11.1	9.1	12.6	12.9	9.9	15.2	11.0	10.1	Dinka					
6.1	6.3	5.5	6.5	6.1	7.2	6.5	14.1	13.1	11.1	11.1	11.6	14.0	11.0	18.2	19.0	19.2	47.0	Shilluk				
6.3	8.5	6.7	5.4	7.2	4.2	11.0	15.5	14.4	11.3	11.3	13.8	13.2	15.7	16.5	14.3	11.3	7.1	12.2	Gaam			
4.2	5.4	5.6	6.6	8.3	3.2	9.9	10.4	11.5	8.3	8.3	10.8	14.3	14.6	10.4	10.3	11.5	10.3	11.3	31.3	Sillok		
6.5	8.9	9.1	8.9	11.8	7.7	8.0	9.7	9.7	8.6	9.7	12.2	12.6	15.3	9.7	9.6	10.8	10.6	12.8	30.9	65.6	Malkan	
4.3	6.6	5.7	5.6	9.6	5.4	11.1	11.7	12.8	8.5	9.6	11.0	15.7	19.5	8.5	9.5	9.6	12.6	11.6	31.9	59.6	57.1	*T

*T = Tornasi

Figure 2: *Nearest Neighbour*

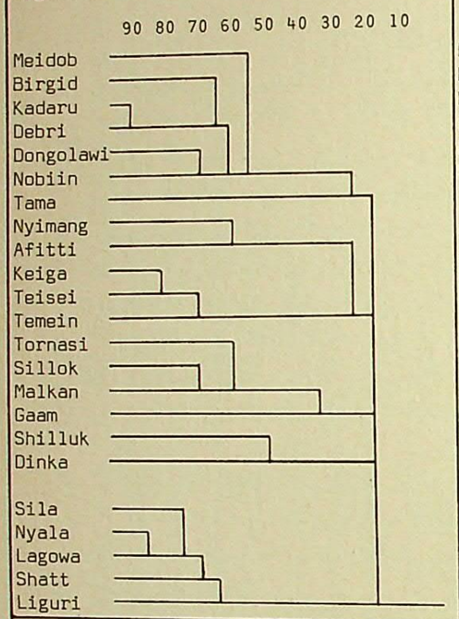


Figure 3: *Furthest Neighbour*

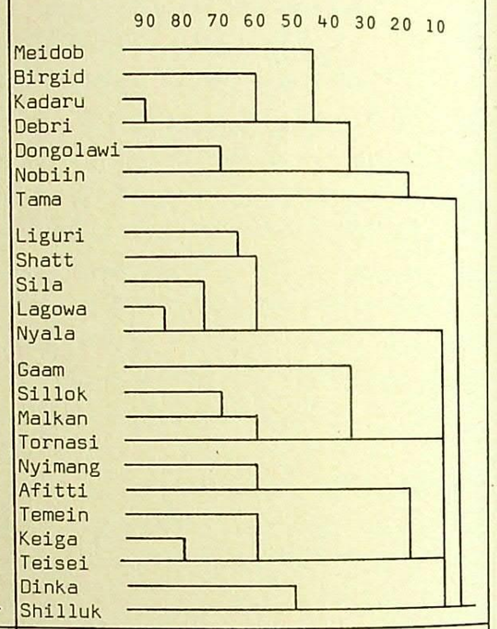


Figure 4: *Centroid*

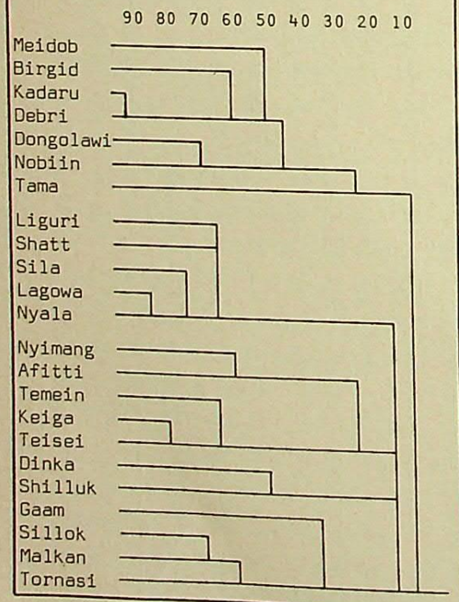


Figure 5: *Average Linkage*

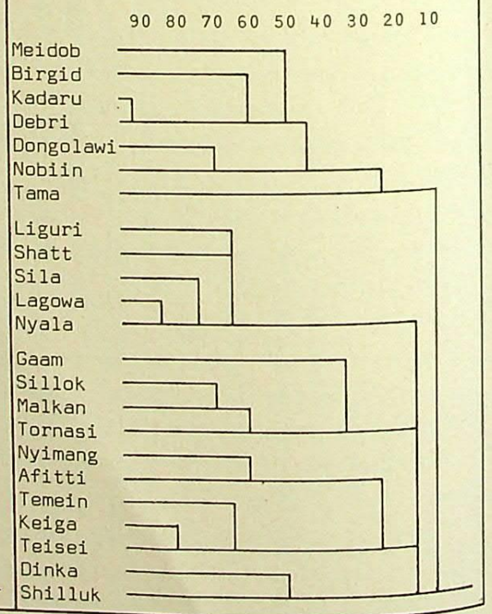
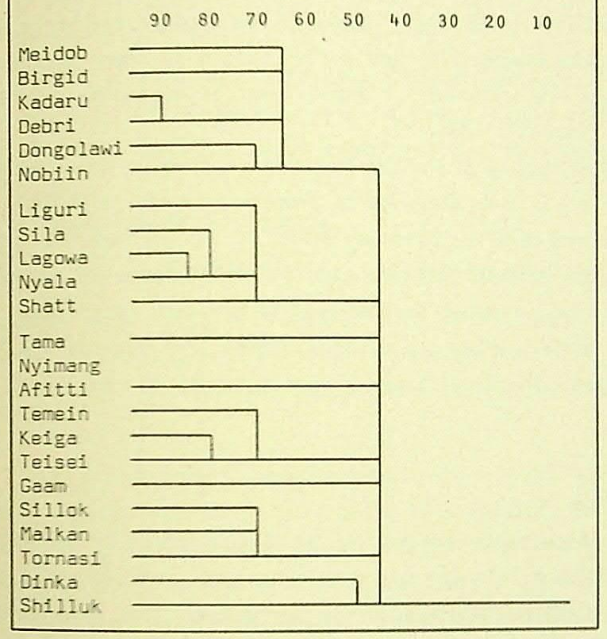


Figure 6: *Median*



with Nyala and 60 with Sila. With Liguri (the only neighbour to the (north-) east) it gives 64.3. This is marginally above the median of the range Shatt : Lagowa, Nyala and Sila - 63.35: thus while the high with Lagowa pulls it towards the Western group, the above median (and above average - 62.96) count Shatt : Liguri pulls it away from them. Thus for the present, and of particular importance for reconstruction, the three way split shown by the three averaging cluster analysis techniques will be treated as the most probable representation of the diachronic development of these members of the Daju group. Stevenson's placing of Shatt firmly with Liguri opposed to the rest of the Daju group is based on two main factors (personal communication): the presence of [x] in Shatt and Liguri where the Western Group mostly have [r], and the divergences in the morphology of noun plurals between Shatt and Liguri and the rest. It is not possible within the confines of this paper to present all the evidence available for the resolution of these questions, but the relevant examples are highlighted and Thelwall 1981 will include more.

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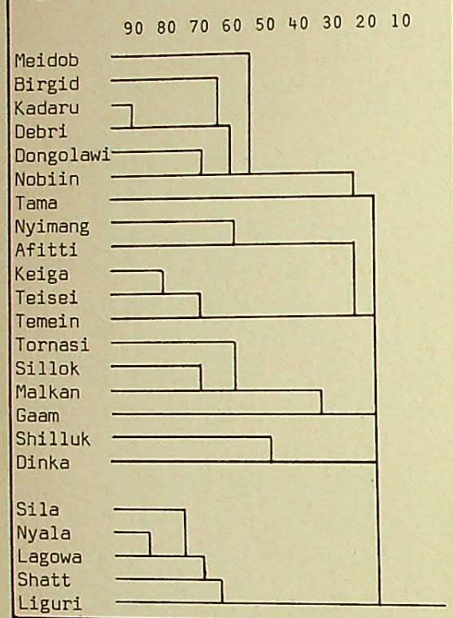
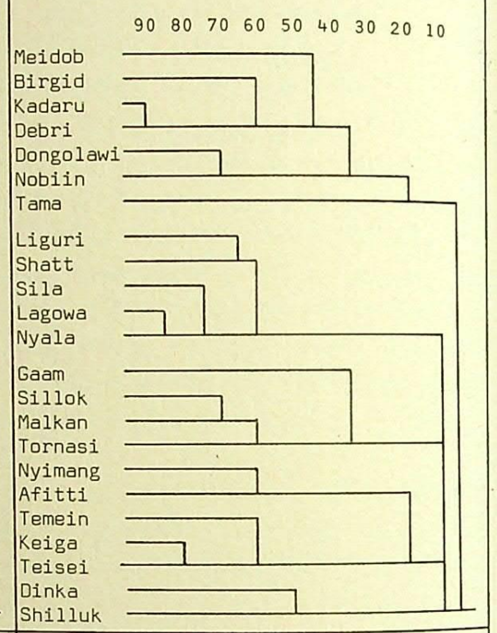


Figure 3: *Furthest Neighbour*



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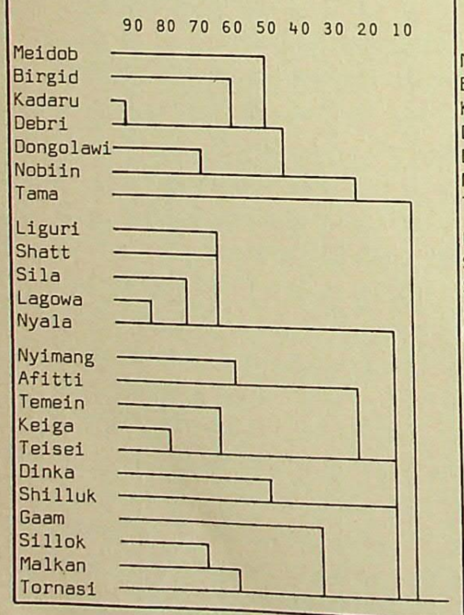

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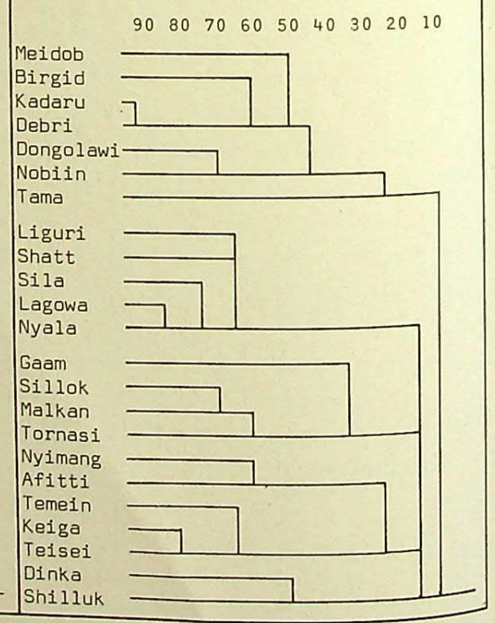

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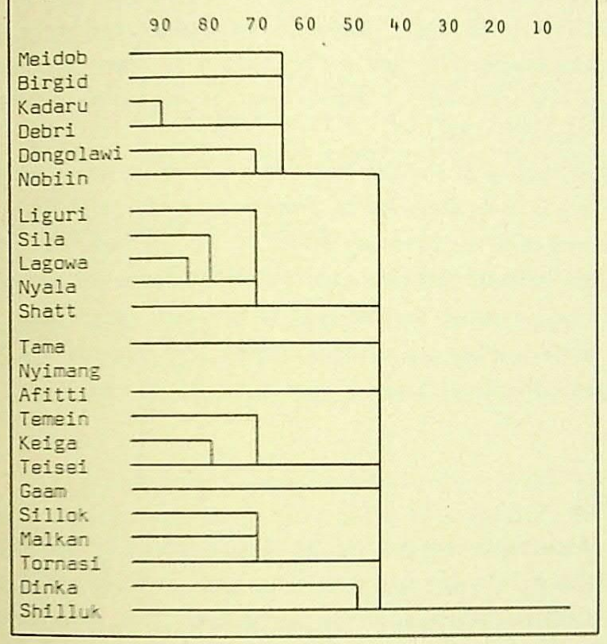

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The comparative lists presented in section 6 of this paper should provide sufficient evidence for the proposed reconstructions. The variable quality and quantity of data on the languages cited makes it important to grade the reconstructions in terms of firmness. As far as possible the items presented cover the 210 item basic list (Schadeberg 1975) and a few additional items that were presented at the colloquium are included. A further set of approximately 150 items will be included in Thelwall 1981.

The lexicostatical subgrouping presented above is of primary importance in deciding which attested cognate sets allow us to propose Proto-Daju (PD) forms. Given our provisional acceptance of a three way split at the highest node of the Daju tree, we will allow reconstructions based on attestations in any two of the three highest branches. However in view of the question of various stages of possible later contact after the various splits, reconstructions based on only two or three neighbouring languages will be considered less certain than others.

3. SYSTEMATIC PHONETICS

Complete synchronic phonologies are not yet available and so it is emphasized that the symbols employed here are systematic phonetic. Provisional analysis has codified much of the obvious allophonic variation. The systematic phonetic inventory covering all five languages is:

p	t	c	k				
b	d	j	g		i		u
ɓ	ɗ	jˀ			e	ə	o
m	n	ɲ	ŋ			a	
	s	ʃ	x	h			
	r ɽ l		(ɣ)				
w		y					

N.B.

[ɣ] was only recorded in one realisation of a Shatt item 'fly' (n.) aŋaɣasic ∿-x-.

/p/ is realised [f] in W. Daju, except in medial consonant combinations.

/t,d/ are alveolar in W. Daju, and either dental or alveolar in E. Daju but never in opposition.

/c,j/ are palatal stops or affricates.

/x/ is realised as [χ] normally, with rarer [x], uvular trill is a variant.

/r/ is realised flapped [ɾ] or trilled [r] in free variation.

/o/ is realised in the range [ɔ∿ɒ].

/u/ is realised in the range [u∿ʊ].

/i,e/ approximate to Cardinal Vowel values.

Double vowel symbols indicate phonetic duration. No vowel length opposition has been established for any language. Since these languages are not tonal this may well indicate my perception of stressed syllables.

4. MORPHOLOGICAL STRUCTURE

The most noteworthy aspects of morphology for the reconstructions are:

1. *Noun morphology*: Daju employs various suffixes to mark singulative, generic and plural, and unmarked stems also occur. A full account of the system will appear in Thelwall 1981. Some nouns have clearly combined more than one suffix.

2. *Verb morphology*: Extensive data is only available for Nyala, but the data enables us to distinguish the root which typically consists of a monosyllabic stem (C)VC(C). The Imperfective normally adds a stem prefix a(n) - depending on whether the stem has an initial consonant. It also takes person suffixes. The Perfective takes a prefix kV- where V is normally harmonized with the stem vowel. There is also evidence for a verbal infix which appears as -s-. Its function is not known.

5. PRINCIPLES OF RECONSTRUCTION

K represents an uncertain choice between k,g

X represents an uncertain choice between x,ɣ

R represents an uncertain choice between r,l

Sila has a tendency to labialise vowels in the context of a velar consonant. See 'near', 'short', 'smoke', 'to sleep', 'day', 'five'. This may well indicate labialised velar consonants at some stage in the development.

A dash (-) represents a boundary and is sometimes the end of a reconstruction where the morphological information is either lacking or inconclusive. In the case of many nouns the stem + suffix has been reconstructed with no indication of the boundary. A full account of this will appear. It is assumed that all nouns in Proto Daju had a stem affix *-e. The suffix -tic, -tas is a singulative. In some cases misinterpretations are evident in the allocation of a form elicited to singular or plural.

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w		y						

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Body parts and kinship terms are often difficult to elicit without pronoun suffixes and thus are often listed with a dash where the stem final vowel is unattested. The investigation of the correspondences between E. Daju (Shatt, Liguri) forms with [x(γ)] and W. Daju (Sila, Nyala, Lagowa) forms with [r, k, h] or Ø has led to a speculative but fruitful hypothesis. There is a significant number of items where E.D. [x] corresponds to W.D. [r], e.g. 'dance (1)', 'die', 'drink', 'far', 'fly (n.)', 'grass', 'green', 'heavy', 'hole', 'know', 'leg', 'louse', 'moon', 'nail', 'root', 'scratch', 'see', 'sew', 'sky', 'slave', 'sun', 'tooth', 'woman', 'worm'. However elsewhere E.D. x corresponds to W.D. [k, h, g] or Ø. It is proposed that Proto Daju had the oppositions *x, γ, r; that intervocalic present W.D. [r], E.D. [x] derive from *-γ-.

The evidence for Proto Daju ***x** is slender and is only reconstructed in 'worm' ***uxuce**, 'bee' ***təmoxe**, 'blind' ***ŋojʔoxe**, and 'two' ***pidax**. In consonant combinations with present E. Daju [x], the reconstructions cannot clarify whether the proto segment is *x or *γ and so *X has been employed. The examples are:

Njalgulgule	
abarke	hair
koŋorse	heart
paha	kill
yohɛ	man, male
korkane	snake

With the crucial help of a Njalgulgule word list collected by Jon Arenson of SIL and sent to me by Wanda Pace after the Leiden colloquium the above have been reconstructed with *-γ-. This leaves 'stick' and 'thick' with *X.

Owing to limitations of time and space, further data on Njalgulgule will not be included here but will appear in Thelwall 1981.

Some reconstructions are marked WD or ED. The WD restricted forms support both Stevenson's and the lexicostatistical grouping of Sila, Nyala, Lagowa. The position with Statt and Liguri is still not resolved however. If the WD:ED [r]:[x] correspondences had led to deriving them from *r (which has been shown to exist separately - see e.g. 'animal', 'dust', 'how many', 'hill (2)', 'red', 'tongue', 'where', 'six'), then the conclusion would have been inescapable that the development of *r > ED [x] depended on their being in the same sub-branch. Since we have proposed *γ > WD [r] because of the two different sets of correspondences of ED x with WD the question as to whether the reconstruction of this segment supports a two way or three way split at the highest node of the Daju sub-grouping is not answered since most present Shatt, Liguri [x] is derived by a simple phonetic change [-Voice] to a segment which retains its original place and manner of articulation, while the WD forms with [r] represent a more complex phonetic shift.

The proposed reconstruction of these segments requires further data and in particular for Njalgulgule and Liguri, to set it on a firm foundation, but at present it allows no decision on whether Shatt and Liguri form a combined and distinct ED branch. Clearly other reconstructed ED forms do tend to support Stevenson's sub-classification. (I am greatly indebted to my colleague in Coleraine Michael Lamb for extensive discussion of this problem and the proposed solution.)

A question mark (?) indicates a second order reconstruction whether for reasons of problematic correspondences, or because the comparisons are between two or three neighbouring languages.

6. COMPARATIVE WORDLIST

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
all	weyiŋ, saɗa	ŋadəŋ	ŋaadiŋ	kudduk	uddol	-
animal	duruce	-	orai	orai	wakkai	*orai ?
arm, hand	ande	ande	(ŋas-)ande	and-	add-	*ande
finger	ande cace	ande ma siɲəŋ	pr-ande	pəxə-and-	px-add-	-
ashes	usuguce	uskuce	uskuce	uskuc	kukuus	*usukuce
back	oŋe	oŋe	oŋ-	oŋ	ɗaɗaŋ	*oŋe
bad	rac	rabar	labəər	taas	taas	WD *rabər ? ED *taas
bark (n.)	-	-	kabwindice	kuɓundwie	kuɓudu	*kaɓunduce
bat	duŋne	kəjiji	kəjigiji	kəjigiji	kojʔok	*kəjoge
bee, honey	tomoge	tomohe	təmohke	tumox	tumox	*təmoxe
belly	butuure	ʃəmee	ʃim-	ɓileek	ɓileeke	WD *ʃime ? ED *ɓileeke
big	mitaaga	klaŋ	klaŋ	ŋonde	ɓikke	-
bird sg.	awade	awade	awade	awad	aɲiis	*awade
pl.	awadiŋge	awaduge	awadtage	awiɲ	aɲɲ	
to bite	gas	akas	kasa	kas	kasa	*kas-
black	jil	jil	jʔilla~jiisil	jʔul	jʔuul	*jʔul
blind	mojʔoge	mojohe	ŋojohe	ŋojʔox	ŋojʔox	*ŋojʔoxe

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finger	ande cace	ande ma siɲəŋ	pr-ande	pəxə-and-	px-add-	-
ashes	usuguce	uskuce	uskuce	uskuc	kukuus	*usukuce
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belly	butuure	ʃəmee	ʃim-	ɓileek	ɓileeke	WD *ʃime ? ED *ɓileeke
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bird sg.	awade	awade	awade	awad	auɲiis	*awade
pl.	awadiŋge	awaduge	awadtage	awiɲ	auɲ	
to bite	gas	akas	kasa	kas	kasa	*kas-
black	jii	jii	jʔilla~jissii	jʔui	jʔuul	*jʔul
blind	mojʔoge	mojohe	ŋəjohe	ŋəjʔəx	ŋəjʔəx	*ŋəjʔoxe

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
blood	tamuke	tamaake	tamake	taamic	teemak	*tamuke
to blow	toro	uusa	usu	uusu	usi	*uus-
blunt	wala-wie (Neg+sharp)	dukum	ta-wie-ba (?+sharp+Neg)	tumudumul	tuppuŋ	-
bone sg.	korgomne	ŋayuce	ŋaiwice	ŋac	ŋoŋŋis	*ŋa-
pl.	korgomge	ŋayuge	ŋayuge	ŋaju	-	
boy, sg.	cace	cece	prace	tabbaruk	cas	*cace
child pl.	-	coke	njoke	-	-	
breast, sg.	ɲidice	-	ɲidice	kidi	-	*-idi-
nipple pl.	ɲidige	ɲidige	ɲidige	kidiju	kiɗiige	
to breathe	uŋu	uuŋu	uŋu	uuŋu	uŋu	*uuŋ-
to burn	-	tuɲ	toro	duɲ	aɓuxu	*tuɲ-
butterfly	-	brgbrgo	brgbrgo	puruburu	kabepex	*peɣ ?
claw, nail	siŋgindirice	ɲuruce	ɲuruce	ɲix-tə-andwan	-	*ɲuɣe
clean	-	yeryer	wara	wara	toddol	-
cloth 1	kadie	-	-	-	ketka	*katie
2	-	tandəne	ʃokaane	tandu	-	*tandu
cloud	siɗice	sidie	madaldage	timgaaru	tiiwit	-
cold	kirkire	krkr	krkəˀər	tuddi	pəpx	*kəɣkəɣ ?
to come	ɓou!	ɓoŋ!	ɓo!	bo!	ɓoŋ!	*ɓoŋ!
(imperf.)	wuna	wuna	una	wun	wune	*wun-
to cook	ɓakas	mbakke	mbatte	mbatte	-	*mbak- (cf. take)
to count	ŋgandi	ŋande	aŋgane	aŋgana	agade	*ŋgan-
to cut	di	biri	teme	kalu	abədo	-
to dance, play 1	waɲ-	-	waɲe	-	-	WD *waɲ-
2	-	cora	-	coxa	coxo	*coɣ-
to die	-irsi	-rsa	-rsa	-əxsə	əxs	*əɣ-s-
to dig	ɓoya	-	aɓooso	ɓoos	aɓoya	} *ɓo-
to hoe	adogo	ɓoso	ali	waige	ɓoya	
dirty	-	kindic	kindic	ɲəbələk	mudak	-
dog	iise	iise	iise	iis	iis	*iise
dream	miniŋge	mənaŋge	mənaŋge	miniŋ	aməniŋi	*minaŋe
to drink	wur	wur	awuri	awuxi	awuxi	*wuɣ-
dust	usuktice (cf. ashes)	lagge (< smoke)	kurkure	ndukurudi	urga	*kur

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
ear sg.	unde	unde	unute	-	wunett	*wunute
pl.	uŋge	uŋge	unuŋge	uŋge	-	*wunuŋge
earth, ground	usuuge	səke	səkke	zək	səkk	*usuke (cf. ashes)
to eat	si	asie	asie	asie	azee	*si-
egg sg.	walace	-	olagice	gildic	oloodos	*wala
pl.	walage	-	olaage	gilu	olooda	
elephant	tomose	tomoʃe	tomoʃe	tumos	təmos	*təmose
empty	-	kooba	waane	leŋe	kəmaasəs (= dry)	-
eye sg.	oŋoɲje	oŋone	oŋone	aun	aun	*aŋun
pl.	oŋoɲjige	oŋoɲje	oŋoɲje	ag	-	
to fall	-dal	təələŋ	-deləŋ	-deləŋ	-ɗel	*tel-
far	tiraŋa	traaŋ	traaŋ	təzaaŋ	təxxan	*təɣaŋ
	(N.B. segment duration is affected by expressiveness)					
fat (n.)	mwide	mide	mwide	mwida	muuj	*mwi-
fat (adj.)	kiɓiŋis	kuiŋ	kuiŋ	kawiŋ	-	*ke-ɓiŋ
to swell (perf.)	ki-biŋ	kə-bəŋ	kəbeŋ	kaa-ɓəŋ	kə-ɓeŋ	*ɓiŋ-
father	me-	baba	me-	appa	me-	*me
to fear	ɓagaa	ɲaga	ɲaga	ɲega	ɲaag-	*ɲag-
few	caka	cəke∿siɲəŋ	prʃoi	ɓilaˀax	teteoŋos	-
to fight 1	ɗisa	-	-	-	aɗəsee	*ɗis-
2	-	poga	poga	abogo	-	*pog-
fire sg.	maase	maase	maase	maas	maas	*maase
pl.	mastige	-	maastage	maastada	maastiɲ	*maastige
dry (< perfective of 'to dry')	kamaas	kamaas	kamas	kamaasə	kəmaasəs	*ka-maas
fish sg.	asice	asice	askice	axsic	axsəs	*aksice
pl.	asicke	asəke	-	aas	eggas	
to flow, run	wie	borso	ɓooso	koi	biste	-
flower	-	-	tudulusie	dudulus	tuudul	*tudulu-
fly (n.)	oŋorce	oŋorce	oŋorice	aŋaɣasic	amxouz	*aŋoɣe
to fly	buk	oyo	oyo	saɲ	bak	*bak-
food	siike	siake	siake	siat	sia	*sia- (cf. 'to eat')
full	-	kəpəs (< pis-i 'to fill')	kəpəss	kabəs	təbb	*ka-pəs

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
gazelle sg.	muse	musəne	-	musun	-	*musune
pl.	musige	musuge	musuŋge	musuunu	-	*musuge
to give	inda!	togi!	datta∿tuwa	togi!	aɓeŋe	*tog-
to go	abalas	wede	awede	wede	awede	*wed-
goat sg.	aiʃe	mirice	aise	ais	az	*aise
pl.	aske	-	aʃke	-	-	
god	kore (=sky, rain)	kalge	kalge	kalk	ɓaliga	*kalge
good	ɲaro	ʃeedi	ʃagalda	opoyo	loŋŋai	-
grass	ŋarice	ɲarice	ɲarice	ɲaxic	ɲaaxəs	*ɲaɣice
green (∿young, unripe)	rahiriŋ	raʃar	laʃəra ∿laʃiəər	-	lassax	*lasiəɣ
guts sg.	-	kocolboce	kajalbogice	kijalbuk	kajalɓəs	*kacalboce
pl.	kajilbike	kocolboke	kajalboke	kijalbugiɲ	kajalbək	*kacalboke
hair, feather sg.	abake	apace	abahice	abaxtic	abaxtəs	*abaɣtice
pl.	abaktice	apake	abahke	abax	abax	
head sg.	iise	əse	sə-	zu	za	*isu
pl.	iisige	səŋge	siɲj-	zəŋg-	zig	*isuŋge
to hear	ciŋa	ʃue	ʃue	ndəŋ	jule	-
heart	koŋgose	koŋokse	koŋokse	px-ombəgaxsəge	kəɲaxs	*kiŋoɣse
heavy	-	tədər	todoŋa	tətəx	təttəx	*tətəɣ
to hit	abaade	auda	awe	ɗadda	aɗouda	-
hole	ara	buude	ɓuude	axəɗok	axou	*aɣo
horn sg.	yace	yace	yace	yaxtic	yaxte	*ya-
pl.	yaŋge	yaŋge	yaɲjuge	yaxtiju	yakke	
hot	kibeya	tabi	təbeei	təbei	təppai	*tapei
how many	ŋgiriŋ	krem	kərem	kreɲ	-	*kəreŋ ?
to hunt	-	daare	ŋgaige	tillak	goolo	-
to kill	baga	paha	abahe	paxa	abaxa	*pag-
knee sg.	siminde	ʃiŋde	ʃiŋde	sond-	səmd-	*simde
pl.	simindige	ʃiŋdəge	ʃiŋdəge	səndu	səmdig-	
to know	ursa	wurse	wurse	ayəx	yex	*yuɣ-
lake sg.	morre	luugune	palbale	luuku	luuga	*luuku
pl.)	-	lugunəŋge	-	lukuddi	-	
to laugh	gugo	akuku	kugu	aguugu	agugu	*kuk-
left hand	ɲogolo	ɲogole	ɲogole	ɲogol	ɲogol	*ɲogole

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
leg, foot sg.	ere	ere	erne	exe-	ix	*eɣe
pl.	ereŋge	eruge	eriɲje	exeŋg-	ixgumho	
light (≠ heavy)	-	pilbil	pilbila	pibbil	pibbil	*pilbil
liver	mece	muce	muce	ɲimec	mes	*muce
long	loya	loi	loi	loˀoi	-	*loi
louse	-	təŋgərce	taŋgarice	tiŋgəxsic	təgge	*tiŋgare
man, male 1	yoge	yohe	yohe	-	yox	*yoge
2	-	-	pabaŋe	abaŋ	-	*pabaŋe
man, person sg.	beke	-	ɓegenice	-	-	WD *beke
pl.	kine	kine	-	kiik	kik	*ki-
many	weya	wei	wei	maŋŋe	datta	WD *wei
meat	iye	iiye	iiye	yyə	iya	*iye
moon, month	erseme	emʃere	iʃmere	asmix	emsex	*isimeɣe
	(∿ erheme)	(N.B. Njalgulgule = isimere)				
mother	ɓoha	yaa	ɓo-	ɓo	ɓo	*ɓo-
mountain, hill, stone 1	ŋaɲje	ŋaɲje	ŋaɲje	ŋac	-	*ŋa-
2	-	-	cabre	cabr	-	*cabre
mouse, rat	nigise	ɲəŋse	ɲiŋse	ɲiŋəs	yiŋəs	*ɲiŋəse
mouth	uke	əkke	ikke	ik	əkk-	*əkke
name	aŋge	aŋge	aŋge	agge	agge	*ange
narrow	-	siɲəŋ (= small)	kerekua	kəɗejewa	kəlləp	*kəReku
near	mituga	ɲətək	ɲitək	kəssac	tariya	WD *ɲitək
neck 1 sg.	-	aməce	amece	-	aməc	*amice
pl.	-	aamuge	amitaage	-	aməce gumho	
2 sg.	ŋaase	-	-	ŋas	-	*ŋaase
pl.	ŋaastige	-	-	ŋastəŋ	-	*ŋaastige
new	-	taajəŋa	taajiŋa	-	-	-
night	wide	ode-jil (place-black)	woŋe	oŋut	woŋ	*woŋe
nose sg.	mone	mone	mun-	muun-	muun-	*mune
pl.	mociŋge	-	mucəge	muuniɲ	mutku	
old	erhemme	klaida	-	boxoox	ɓoxkoɲ	-
path, road sg.	soge	soge	sooge	-sok	-sokk	*soge
pl.	sogtiŋge	-	sogtəge	-soktadda	-sokkta	*sogte-
to pull	mbai	mbai	mɓada	ɲasa	aɲase	WD *mba-
to push	mbaya	ica	asajˀe	azajˀe	sija	*saj-

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
red	pirro	pr	prra	pr	pee	*pir
right, correct	-	todeen	-	tireniŋ	təbatto	-
right hand	ɲoktodo	morsolle	ande-siake (hand-food)	abaanic	ɓaanəs	*ɓaanice cf. to come for b:ɓ
river	alale	alale	celooŋgo	coloŋgo	pox	*celoŋgo ?
root, vein	mirmirice	-	-	məx	maxke	*miɣ
rope sg.	sitte	sitte	sitte	zitt	sət	*sitte
pl.	sige	sittuge	siige	ziu	səttu	*sittu-
rotten	pirro	meɲ	komoosə	ŋoso (< to smell)	kojopoŋei	-
rough	-	-	-	ikwaan	ŋoŋox	-
round	-	kleŋ	-	turu?us	kuggul	cf. to turn
to rub	worti	mo	mua	maasa	abəski	*mua- ?
saliva	aluke	aləke	aləke	oluk	alək	*aluke
salt	karkade	kologoce	ŋgəloke	aŋguleke	ulaŋ	*aŋ-kaluka- ?
	N.B. lip-rounding with velars in Sila makes *o less plausible than *a					
sand	alale (cf. river)	cəkcəgaide	cakcagaida	dilwic	tuwees	-
to say, talk, tell 1	ŋada	aujei	ŋada	aŋade	-	*ŋad-
2	alege	libi	or	ləbe	-	*lib-
to scratch	goroɲ	ŋgoroɲ	ŋgor	goxiŋ	oxoɲo	*goɣoɲ-
to see 1	ora	ɲe	ooro	ox	-	*oɣ- ?
2	-	-	-	~lala	aɽa	ED *al-
seed, sowing 1	bude	ʃəbeke	ʃəbke	zəbsi	səɓece	*sibe-
2	yuke	yuke	yuke	-	-	WD *yuke
to sew	aari	aara	are	axaa	-	*aɣ-
sharp	wiyo	wii	wiya	wiei	cejeem	*wii-
to shoot	jaga	dụbu	awe	ɗime	aɗaba	-
short	tuluŋa	tələŋ	tələŋa	tələŋ	təlləŋ	*tələŋ
to sing	laŋiciŋ	laŋici	alaŋice	alaŋaca	alaaŋe	*laŋ-
to sit, stay, remain	ucu	ucu	uca	icca	azŋutunda	*uc-
skin sg.	miye	morte	ɗokande	mmi	mmi	*mie
pl.	midige	-	-	mmidi	mmedi	*midi-
sky, rain	korre	kore	korne	koxa	koxa	*koɣe
slave sg.	ciire	celle	cille	ciləx	-	*ciləɣe
pl.	cirike	cerke	cərke	cilaxxiɲ	-	

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
to sleep	suŋdi	səŋda	səŋga	səŋda	-	*səŋd-
day (24 hours)	suŋgu	səŋge	səŋge	səŋŋe	-	*səŋg-e
small	ɲjikega	siɲəŋ	prʃoi	byeʔei	teteoŋos	-
to smell	ŋosa	ŋooso	ŋooso	ŋoso	ŋooso	*ŋoos-
smoke	lugtice	ləgge	ləge	lәkk	lәkk	*ləge
	N.B. -ge, -k are not thought to be the same suffix					
smooth	pere	pariʃpait	pricpric	sirəzəri	sessex	WD *pari ED *siɣsiɣ
snake 1 sg.	koke	kokane	kohkane	-	-	WD *koɣkane
pl.	kokige	kokuge	kohkuge	-	-	WD *koɣkuge
	N.B. Absence of data for E.D. is balanced by Njalgulgule [korkane] which is the justification for *-ɣ- rather than *-X-					
2 sg.	-	-	-	dol	dol	ED *dol
pl.	-	-	-	dollu	dooɽu	ED *doolu
spear	tawalde	malaʃte	malaaʃte	malas	maalasə	*malase
to spit	daga	ceda	ceda	birsi	abudo	-
to split, divide	ɗeɗa	detta	ɗete	lare	dette	*det-
to squeeze	sika	-	ʃək	səkissa	-	*sik-
	-	mooso	∿amoso (cf. to rub)		amuxtici	-
to stab, pierce	ustu	uʃtu	uʃta	ŋasa (?)	asdigiik	WD *usit-
to stand up	doya	iʃa	iʃa	ŋasa	usu	*is-
star sg.	paɗawe	ɲece	ɲiŋice	niɲwesic	azaxtas	*ɲece ?
pl.	paɗauge	ɲege	ɲiŋge	niɲwes	aazaɲ	*ɲiŋge ?
stick	dugula	celaaŋe	celaŋe	gax	kax	ED *KaX
to suck	ɓan	bana	ban	ban	aɓaana	*ɓan-
sun	roŋe	oroŋe	rooŋe	xoŋ	oxgohoŋ	*oɣgohoŋe
to swim, float 1	wada	awaɲ	wada	-	-	WD *wad- ?
2	-	-	-	ɓaaya	ɓa	ED *ɓa-
tail sg.	ibe	iibe	iibe	iib	iibe	*iibe
pl.	ibiciŋge	iibuge	ibitage	iibtiɲ	ibtigge	*iib-te-
to take	ɓaga	baga!	bake	ɓaga	-	*ɓak-
(imperf.)	-	bakte	-	aɓatte	aɓatte	
thick	mitaage (= big)	timic	timig	tijax	tijʔaax	ED *tijʔaX
thin	waara	waar	-	-	wax	*waaɣ

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
to throw	mbira	jebe	aʃe	gawi	aɗaba	-
to tie	aski	akse	akse	axse	anze	*aks-
tongue sg.	ɲirbe	ɲabre	ɲabre	ɲibur	ləbbəx	*ɲabre
pl.	ɲirbiciŋge	-	ɲabrtage	ɲiburiɲ	(cf. Nilotic)	
tooth sg.	ɲirte	ɲərte	ɲerte	ɲixt-	ɲixt	*ɲiɣte
pl.	ɲirke	ɲərke	ɲerke	ɲix-	ɲix gumho	
tree sg.	ette	ette	ette	ett	eewes	*ewete
pl.	ewege	ewege	ewege	ewe	ewe	*ewege
leaf	-	unde-ette	unu-t-ette	wun-g-ett	un-ette	(ear-tree)
to turn	kogoloŋ	ceŋ	lət	urtege	agolokgoloŋ	*goloŋ
to vomit	bik	pəge	bəge	ajalage	ajalage	WD *bik- ED *ajalag-
to wash	daidi	daye	aɗaye	ɗaaya	aɗai	*ɗai-
water	uŋge	əŋge	maage	ma	ma	*ma
wet	sume	ɲidak	ɲidaak	tuddi	pəpx	-
what?	ja	dua	ɗira	wiaŋ	waayan	-
when?	tukur	pooki	pohki	oogei	səxoŋ	-
where?	tir	mintia	mandida	tii	tei	*tir
white	paparaga	paʃ	paʃ	bou	pabbal	*papaR ?
who?	mina	məna	məna	xənaŋ	keneen	WD *mina
wind	mege	megede	megene	megedde	mege	*mege
wing sg.	-	uduce	uduug	kuɓuktuc	kuɓuudice	*kuɓ-uduce ?
pl.	-	uduuge	-	kuɓɓukk	kuɓuukke	
to wipe	wotidi	saɲa	eegere	awaɲis	-	-
woman sg.	wure	wəre	wure	uux	ux	*wuɣe
pl.	wurge	boɲje	uruuge	-	uxi	
to work, do, make	kidime	soga	ɗue	ewexe	ateɗe	-
worm sg.	-	ohoce	uhuce	ooxic, ox	uuxus, ux	*uxuce
pl.	-	ohke	uhke	ooxuju	oxoji	
year sg.	oso	senene	jene	oso	cegga	*osote
pl.	osotke	(< Arabic?)	-	osodduuk	-	
rainy season	-	oʃoŋe	-	oso	-	-
yellow	pira	-	puʃʃa	bu?bbəx	pəxaɲ	cf. red
one	uŋun	nowane	nowane	nuxu	nohorok	-
two	bidak	pəda	pədah	pədax	pədax	*pidax

	Sila	*Nyala*	*Lagowa*	*Shatt*	*Liguri*	*Reconstruction*
three	kodos	kodos	kodos	kodos	kodos	*kodos
four	tiʃet	teʃpe	teʃpe	tespet	tespet	*tispet
five	muduk	mədək	madak	mədak	mədək	*madək
six	aran	aran	aran	aran	koskodos	*aran
seven	paktindi	paatindi	pahtindi	paxtindiŋ	tespet kodos	*paɣtindi
	N.B. *-ɣ- confirmed by Njalgulgule [partindi]					
eight	kohonda	kosanda	kosanda	kosindi	tespettespet	*kosande
nine	bistanda	tabiʃtanda	tebiʃtanda	tabisindaŋ	mədəktespet	*tabistanda
ten	asiɲ	asiɲ	asiɲ	asiɲ	sa?asiɲ	*asiɲ
	N.B. Assuming that Liguri is a separate development, possibly related to Kordofanian numeral systems, it is clear that the rest represent a five digit, hand based system with numbers above five representing n (= 1-5) + hand. This was first pointed out to me by Roland Stevenson.					
I	anaŋga	aga	agə	ag	aga	*aga
thou	iniŋga	igi	iŋgi	gi(niŋ)	kinaŋ	*gi
he	ma	} aba	} aba	ma	} ma(n)	*ma
she	ce			ce		*ce
we (excl.)	koska	} iʃoŋga	} aʃko∿wisko	was	asko	-
we (incl.)	kona			kok	konok	*kon-
ye	iwe, uwe	oŋgo	oŋgo	aŋgo	ago	*aŋgo
they	sa∿ha	ana	ana	sa	zaki	*sa

NOTE

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to throw	mbira	jebe	aʃe	gawi	aɗaba	-
to tie	aski	akse	akse	axse	anze	*aks-
tongue sg.	ɲirbe	ɲabre	ɲabre	ɲibur	ləbbəx	*ɲabre
pl.	ɲirbiciŋge	-	ɲabrtage	ɲiburiɲ	(cf. Nilotic)	
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to wash	daidi	daye	aɗaye	ɗaaya	aɗai	*ɗai-
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wet	sume	ɲidak	ɲidaak	tuddi	pəpx	-
what?	ja	dua	ɗira	wiaŋ	waayan	-
when?	tukur	pooki	pohki	oogei	səxoŋ	-
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pl.	osotke	(< Arabic?)	-	osodduuk	-	
rainy season	-	oʃoŋe	-	oso	-	-
yellow	pira	-	puʃʃa	buˀbbəx	pəxaɲ	cf. red
one	uŋun	nowane	nowane	nuxu	nohorok	-
two	bidak	pəda	pədah	pədax	pədax	*pidax

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five	muduk	mədək	madak	mədak	mədək	*madək
six	aran	aran	aran	aran	koskodos	*aran
seven	paktindi	paatindi	pahtindi	paxtindiŋ	tespet kodos	*paɣtindi

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nine	bistanda	tabiʃtanda	tebiʃtanda	tabisindaŋ	mədəktespet	*tabistanda
ten	asiɲ	asiɲ	asiɲ	asiɲ	saˀasiɲ	*asiɲ

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thou	iniŋga	igi	iŋgi	gi(niŋ)	kinaŋ	*gi
he	ma	aba	aba	ma	ma(n)	*ma
she	ce			ce		*ce
we (excl.)	koska	iʃoŋga	aʃko~wisko	was	asko	-
we (incl.)	kona			kok	konok	*kon-
ye	iwe, uwe	oŋgo	oŋgo	aŋgo	ago	*aŋgo
they	sa~ha	ana	ana	sa	zaki	*sa

NOTE

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Norbert Cyffer

The Person Elements in Saharan Languages: A Step towards the Creation of Proto-Saharan

1. INTRODUCTION

It is common knowledge that the degree of genetic relationship is best documented by systematic comparison of appropriate features of the languages concerned. Ideally the reconstruction of a proto-language, from which language groups and individual languages can be derived, will be the goal of this comparative method.

It is the objective of this paper (a) to illustrate the person elements in the different word/morpheme categories in the individual Saharan languages, (b) to present an analysis of the different constituents of these categories, and (c) to propose a proto-Saharan model for the person elements. I am well aware of the insufficient data from the eastern group (Berti/Zaghawa), but the better knowledge of the western group and the evidence for correspondences with the eastern group permit the establishment of proto-Saharan person forms at this stage of research.

2. THE PERSON FORMS IN KANURI

Person forms occur as independent pronouns or affixes. Often they appear in combination with other formatives, which denote the specific word or morpheme category. In addition plurality can be indicated.

I. *Inventory of person elements in Kanuri*[1]:

1.ps	s (dial: t), i/y;		k
2.ps	n;	m;	b, w/u
3.ps	s (var: z, sh, j; dial: t, ts), i/y;		k

II. *Formatives for word/morpheme categories which contain person elements:*

pronoun (subject, object): i

subject morpheme (affix): -

object morpheme (affix): s

possessives	i) suffix	n
	ii) pronoun	ka (1.sg)
		kag+n (other persons)
III. *Plural formation*		a, da, and

2.1 PERSONAL PRONOUNS

By combining the person elements with the formative for personal pronouns we obtain the following constructions:

					surface forms				
	ps[2]	*pl*	*form*		*KMD*	*KSG*	*KMA*	*KMO*	*KKW*
1.sg	k		i	>	wu	wu	ū		
2.sg	n		i	>	nyi	ni	ni		
3.sg	s/t		i	>	shi	shi	ti	yi	
1.pl	y	and	i	>	andi	yandi	andi		εndi
2.pl	n	and	i	>	nandi	nondi	nandi		
3.pl	s/t	and	i	>	sandi	tandi	tandi	yandi	

The correspondence s:t can be observed in the 3rd person. In the Mobber dialect the person element is realized as y; this change is a common feature in this dialect (cf. 2.4 below). The 1st person plural εndi is evidently a contraction of y+andi. Other dialects (e.g. Maiduguri) have dropped the person element in the surface form.

2.2 SUBJECT MORPHEMES

The subject morphemes, being suffixed in the 1st and 2nd person and prefixed in the 3rd person[3], are the purest ones of the person forms because they do not carry additional formatives (except a plural element).

	ps		*ps*	*pl*
1.sg	s+k (> kk > k)	1.pl	y	a > ye (dial: e)
2.sg	m	2.pl	w	
3.sg	s (var: sə, zə, j, sh, c; dial: tsə, cə, shə, d'ə, i, ji)	3.pl	s	a > sa (var: za; dial: d'a, ca, tsa, ja)

The 1st singular sk in verb class 1 is today in most dialects assimilated to kk and then degeminated to k. In combination with the auxiliary verb root n of verb class 2 there is a tendency toward complete dissappearance of the subject morpheme by weakening processes, e.g. **lenSKin > leŋkin > leŋgin > leŋin > lẽĩn > lein** 'I go'. In the 3rd person a number of variation rules will be applied (cf. Cyffer 1978,1980).

Examples: lad 'sell'

1.sg		lad + SK + in >	ladəkin	'I sell'
2.sg		lad + M + in >	ladəmin	'you sell'
3.sg	S +	lad + in >	səladin	'he/she sells'
1.pl		lad + YE + in >	ladiyen	'we sell'
2.pl		lad + W + in >	laduwi	'you (pl) sell'
3.pl	SA +	lad + in >	saladin	'they sell'

2.3 OBJECT MORPHEMES

The optional object morphemes occur only in the 1st and 2nd persons. If no alternation rules are applied they appear on the surface as:

	sg	pl
1.ps	s(ə)	sa
2.ps	nz(ə)	nza

While looking closer into the structure of the object morphemes, one may conclude that the constituents are a person element, a formative (s), and for the plural the element a.

	ps	*form*	*pl*			*realized as*
1.sg	s	s		>	SS	s, sə, sh
2.sg	n	s		>	NS	nzə, nj, n
1.pl	s	s	a	>	SSA	sa, s + da
2.pl	n	s	a	>	nza,	n + da

In the 1st person the two consonants merge to one consonant s. In the 2nd person the formative s is altered to z by a general rule of voicing after nasals. When the 2nd person object morpheme appears before stops, the formative s is dropped and n velarized to ŋ. The addition of ə is epenthetic, and the alternations s > sh or j are results of palatalization processes. When the plural object morpheme loses its plural element a for phono- or morphotactic reasons, a disjunctive plural marker da is used instead.

E.g. (1)	SS	+ tamin	> sətamin	'you seize me'
(2)	NS	+ takin	> nzətakin	'I seize you'
(3)	SSA	+ tamin	> satamin	'I seize you (pl)'

(4) NSA + takin > nzatakin 'I seize you (pl)'
(5) wu + SS + jin > wushin 'he/she looks at me'
(6) wu + NS + iyen > wunjiyen 'we look at you'
(7) wu + SS + ka-m > wuskam 'you looked at me'
(8) wu + SSA + ka-m > wuskadam 'you looked at us'
(9) wu + NS + ka-ko > wuŋgako 'I looked at you'
(10) wu + NSA + ka-ko > wuŋgadako 'I looked at you (pl)'

Examples (8) and (9) illustrate the loss of the plural a, which is replaced by the disjunctive plural marker da; it appears between the aspect/mode morpheme (ka, ga) and the subject morpheme. Examples (9) and (10) show the loss of the formative s and the velarization n > ŋ.

Contrary to a voicing rule by which the 3rd person subject morpheme s is realized as zə before the phonemes b or g (e.g. S + Bin > zəwin), the voicing does not take place, if the 1st person object morpheme, which on the surface has the same shape as the 3rd person subject morpheme, stands in the same environment, e.g. S + Bumin > səwumin (not *zəwumin) 'you cheat me'. The explanation for this lies in the underlying structure of the object morpheme. While the 3rd person subject morpheme consists of only one consonant (s), the 1st person object morpheme is in its underlying form bi-consonantal (ss) and has been reduced to one consonant. In this case the further weakening process by voicing has not (yet?) been carried out (cf. Cyffer 1980).

2.4 POSSESSIVES

Possessive forms occur as a suffix or an independent pronoun. The suffix is composed of a formative n, the person element, and in the plural, da for the 1st and 2nd person and a for the 3rd person.

	form	*pl*	*ps*	*pl*		*KMD*	*dialects*
1.sg	n		i		>	-nyi	KSG, KMO, KMA: -ni
2.sg	n		m		>	-nəm	KMO, KMA: -num
3.sg	n		s		>	-nzə	KMO: -nzu; KMA, KSG: -nju
1.pl	n	da	i		>	-nde	
2.pl	n	da	u		>	-ndo	
3.pl	n		s	a	>	-nza	

Epenthetic ə appears in the 2nd and 3rd singular; in the 1st plural e is a result of merging a + i, and the 2nd plural merges a + u to o. The voicing rule s > z after nasals has already been mentioned.

The forms in (Kaidi-) Kanembu (cf. Lukas 1931) are identical except for the 3rd person, where the person element is realized as g; plural is marked by d(i?).

	form	*ps*	*pl*	
3.sg	n	g		> ŋge (var: ŋgo, ŋgu)
3.pl	n	g	d(i)	> ŋgedi

The independent possessives obtain an additional kag- (1.sg: ka-, n is elided).

	form	*pl*	*ps*	*pl*		*KMD*	*dialects*
1.sg	ka		sk		>	kaske (> kakke, kake)	KMO: kake, kaē; KMA: kaye, kage
2.sg	kag + n		m		>	kaanəm	KMO, KMA: kagənəm
3.sg	kag + n		s		>	kaanzə	KMO: kagənzə; KMA: kagənju
1.pl	kag + n	da	i		>	kaande	KMO, KMA: kagənde
2.pl	kag + n	da	u		>	kaando	KMO, KMA: kagəndo
3.pl	kag + n		s	a	>	kaanza	KMO: kagənd'a; KMA: kagənja

2.5 RECONSTRUCTION OF PERSON ELEMENTS IN KANURI

From the data given above we may reach the following conclusions:

(a) Three elements occur in the 1st person (k, s, i). As it has already been pointed out for the third person (in 2.1 above) s and i/y may belong to the same underlying phoneme. The correspondence s : y can be illustrated by comparing the Maiduguri with the Mobber dialect, e.g.:

KMD	*KMO*	
sandi	yandi	'they'
su	yu	'name'
cesa	ceya	'sand'

Furthermore there is evidence for the same correspondence in a number of verb bases with initial y, e.g. yat 'carry away':

1.sg		yad	əkin	'I carry away'
	sa	sad	in	'they carry away'

We may therefore assume that s and y are variants of the same phoneme. I will go further and derive s from an underlying phoneme t; the same correspondence could already be observed for the 3rd person pronoun (cf. 2.1 above).

(b) The element m in the 2nd singular could be either a result of merging with b, or a variant or parallel form of b. The b:m correspondence is common in several Saharan languages, e.g. Kanuri (KMA) ŋgərMu = ŋgərBu 'vulture', njiMi = njiBi 'burr-grass'; Berti (MacMichael 1922): **bi** = **mi** 'water'. I tend to accept the first solution, where **m** is derived from **n** + **b**, because similar processes are observed in Teda/Daza (cf. Lukas 1953, Le Coeur 1956), which are closely related to Kanuri. Furthermore the combination of two person elements in one construction is not uncommon, e.g. in the 1st singular: s + k. The element **w** can be considered to be a variant of **b**; in a vowel position it becomes **u**.

(c) The person elements for the third person appear as s, t and i/y. I have already pointed out the correspondence s : y and the relationship to **t**, which can be considered as the underlying person element. In the Kanembu dialect (Lukas 1931) the person elements differ in the 3rd person. Here the morpheme k (> g) serves as person element.

From the preceding discussions I propose *two* elements for each person, of which either one or both are used to denote person in a specific form. The proto-elements in Kanuri are as follows:

	series A	*series B*
1.ps	T	K
2.ps	N	B
3.ps	T	K

The distribution of these elements in the specific forms is shown below:

	pronoun		*subject morpheme*		*object morpheme*	*possessive suffix*		*possessive pronoun*	
1.sg		K	T	K	T	T	K	T	
2.sg	N		N?	B	N	N?	B	N?	B
3.sg	T		T		–	T or K		T or K	
1.pl	T		T		T	T		T	
2.pl		B		B	N		B		B
3.pl	T		T		–	T		T	

3. PERSON FORMS IN TEDA AND DAZA

The person elements in Teda and Daza, which in my opinion are dialects of one language, are similar to those of Kanuri:

1.ps	t, d, r;	
2.ps	n;	m
3.ps	t, c, s, h, y;	k

The other formatives for the personal forms are:

pronoun:	mur (> bur, ubr)
subject:	-
object:	-
possessive	n

The plural is indicated by t (> d) or a, o.

3.1 PERSONAL PRONOUNS

There are different pronoun series (cf. Lukas 1953, Le Coeur 1956), the most consistent one is shown below:

	ps	*form*	*pl*		
1.sg	ta	ubr - e		>	tɔbre
2.sg	n(a?)	ubr - e		>	nubre
3.sg	Ø ta	mur - e		>	mure tamure
1.pl	ta	ubr	a	>	tɔbra
2.pl	n(a?)	ubr	a	>	nubra
3.pl	Ø	mur	a	>	mura

It is arguable as to whether the formative element is basically **mur**, **bur**, **ubr** or **br**. If we consider the 3rd person **mure/mura**, we may conclude that the person is unmarked in these forms. Therefore it seems that **mur** can be assumed to be the basic formative. The correspondence **m:b** has already been mentioned in 2.5. The Ø representation of the 3rd person is a common feature in Saharan languages, e.g. verb class 1 of Teda/Daza verbs (cf. Lukas 1953), or some Kanuri verbs, e.g.:

nu - w - i > 'you (pl) die'

Ø nu i > 'he/she dies'

3.2 SUBJECT MORPHEMES

The subject morphemes are composed of a basic subject element and in the plural an additional t:

1.sg	r	1.pl	t + r
2.sg	m	2.pl	t + m
3.sg	s, t, c, y, k	3.pl	y, c + t

in several Saharan languages, e.g. Kanuri (KMA) ŋgərMu = ŋgərBu 'vulture', njiMi = njiBi 'burr-grass'; Berti (MacMichael 1922): **bi** = **mi** 'water'. I tend to accept the first solution, where **m** is derived from **n** + **b**, because similar processes are observed in Teda/Daza (cf. Lukas 1953, Le Coeur 1956), which are closely related to Kanuri. Furthermore the combination of two person elements in one construction is not uncommon, e.g. in the 1st singular: s + k. The element **w** can be considered to be a variant of **b**; in a vowel position it becomes **u**.

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2.ps	N	B
3.ps	T	K

The distribution of these elements in the specific forms is shown below:

	pronoun		*subject morpheme*		*object morpheme*	*possessive suffix*		*possessive pronoun*	
1.sg		K	T	K	T	T	K	T	
2.sg	N		N?	B	N	N?	B	N?	B
3.sg	T		T		-	T or K		T or K	
1.pl	T		T		T	T		T	
2.pl		B		B	N		B		B
3.pl	T		T		-	T		T	

3. PERSON FORMS IN TEDA AND DAZA

The person elements in Teda and Daza, which in my opinion are dialects of one language, are similar to those of Kanuri:

1.ps	t, d, r;	
2.ps	n;	m
3.ps	t, c, s, h, y;	k

The other formatives for the personal forms are:

pronoun: mur (> bur, ubr)
subject: -
object: -
possessive n

The plural is indicated by t (> d) or a, o.

3.1 PERSONAL PRONOUNS

There are different pronoun series (cf. Lukas 1953, Le Coeur 1956), the most consistent one is shown below:

	ps	*form*	*pl*		
1.sg	ta	ubr - e		>	tɔbre
2.sg	n(a?)	ubr - e		>	nubre
3.sg	Ø ta	mur - e		>	mure tamure
1.pl	ta	ubr	a	>	tɔbra
2.pl	n(a?)	ubr	a	>	nubra
3.pl	Ø	mur	a	>	mura

It is arguable as to whether the formative element is basically **mur**, **bur**, **ubr** or **br**. If we consider the 3rd person **mure/mura**, we may conclude that the person is unmarked in these forms. Therefore it seems that **mur** can be assumed to be the basic formative. The correspondence **m:b** has already been mentioned in 2.5. The Ø representation of the 3rd person is a common feature in Saharan languages, e.g. verb class 1 of Teda/Daza verbs (cf. Lukas 1953), or some Kanuri verbs, e.g.:

nu - w - i > 'you (pl) die'
Ø nu i > 'he/she dies'

3.2 SUBJECT MORPHEMES

The subject morphemes are composed of a basic subject element and in the plural an additional t:

1.sg		r	1.pl		t + r
2.sg		m	2.pl		t + m
3.sg	s, t, c, y, k		3.pl	y,	c + t

An example: wa+n 'dislike'

		sj (3.ps)	*aux*	*pl*	*sj (1./2.ps)*		
1.sg	wa		n		r	>	wanər
2.sg	wa		n		m	>	wanəm
3.sg	wa	y	0			>	wayi
1.pl	wa		n	t	r	>	wantər
2.pl	wa		n	t	m	>	wantəm
3.pl	wa	y	n	t		>	wayintu

The 3rd person element is also realized as c, which seems to be related to k. Two parallel forms which give evidence may be quoted (cf. Lukas 1951/52, 1953): ki+yaki : cegi (< ci+agi) 'he/she drank'. However, Lukas also quotes a dialect form sei (< s + yai), in which the person element s (< t) is in use. In another example Lukas quotes two parallel forms of the defective verb yu 'be enough', in which both 3rd person subject morphemes occur:

t + yu + i	>	tyui	'it is enough'
k + yu + i	>	kyui	

The allomorph of the 3rd person y occurs (according to Le Coeur 1956) in complementary distribution with c depending on the phonetic environment; therefore y should be regarded as an allomorph of k, and not - as in Kanuri - of t.

3.3 OBJECT MORPHEMES

The object morphemes in Teda/Daza are comparable to Kanuri as far as the underlying personal morphemes are concerned, but no specific formative is used. The plural is marked by t. As in Kanuri object morphemes are available only for the 1st and 2nd persons.

	obj
1.sg	t
2.sg	n

	obj	*pl*
1.pl	t	t
2.pl	n	t

Example: 'kill'

sj:	*obj:*	*obj*	*base*	*pl*	*sj*			
1.sg	2.sg	n	yit		r	>	nidər	'I kill you'
1.sg	2.pl	n	yit	t	r	>	nittər	'I kill you (pl)'
2.sg	1.sg	t	yit		m	>	tidəm	'you kill me'
2.sg	1.pl	t	yit	t	m	>	tittəm	'you kill us'

1.pl	2.sg	n	yit	t	r	>	nittər	'we kill you'
1.pl	2.pl	n	yit	t	r	>	nittər	'we kill you (pl)'
2.pl	1.sg	t	yit	t	m	>	tittəm	'you (pl) kill me'
2.pl	1.pl	t	yit	t	m	>	tittəm	'you (pl) kill us'

The examples above demonstrate that plurality is marked only by one element, whether the subject, object or both are plural. This often leads to identical surface forms for different combinations (cf. Cyffer 1978).

In the 3rd person of verb class 2, where both the subject and the object morphemes are prefixed, merging of the subject morpheme with the 1st person object morpheme takes place, e.g.

sj:	*obj:*	*obj*	*sj*	*base*	*pl*			
3.sg	1.sg	t	k	yit		>	jidu	'he/she kills me'
3.sg	1.pl	t	k	yit	t	>	jittu	'he/she kills us'
3.sg	2.sg	n	k	yit		>	ncidu	'he/she kills you'

3.4 POSSESSIVES

There is no evidence for a distinction between dependent and independent possessives in Teda/Daza. The two dialects have identical forms. They are composed of a formative **n**, the person element and a plural marker **t**; when the possessed is plural, an additional plural **a** is added.

	possessed: sg						*possessed: pl (-***a***)*
	ps	*form*	*pl*	*ps*			
1.sg		n		r	>	**nər**	**nəra**
2.sg		n		m	>	**nəm**	**nəma**
3.sg	s	n			>	**sən, hən**	**səna, həna**
1.pl		n	t	r	>	**ntər**	**ntəra**
2.pl		n	t	m	>	**ntəm**	**ntəma**
3.pl	s	n	t		>	**sənto, hənto**	**sənta, hənta**

3.5 RECONSTRUCTION OF PERSON ELEMENTS IN TEDA/DAZA

After the above presentation of the different occurrences of morphemes containing person, the close relationship of Teda/Daza to Kanuri is obvious. Only allomorphic variations and the distribution vary from Kanuri.

	pronoun	*subject morpheme*		*object morpheme*	*possessive*
1.sg	T	T		T	T
2.sg	N	N?	B	N	N
3.sg	T	T or K		-	T
1.pl	T	T		T	T
2.pl	N	N?	B	N	N
3.pl	T	T or K		-	T

The 2nd person elements marked with ? are questionable (cf. 2.5).

4. PERSON CONTAINING FORMS IN BERTI AND ZAGHAWA

The eastern group of the Saharan languages is the least known of this family, therefore we face a number of unresolved problems. It is not possible to trace all forms containing person in the eastern group. However, because of the better knowledge of the other Saharan languages we are able to come to some reliable statements about the relationship between Berti/Zaghawa and the western group.

4.1 PRONOUNS

The analysis of the pronouns in Berti and Zaghawa is not always clear, though some relationships to the western group can be traced.

	Berti (Petráček 1966)	*Zaghawa* (Chalmel 1931)	*Zaghawa* (Lukas 1978)
1.sg	su	ei	aydi
2.sg	negei	na	naadi
3.sg	korei	oto	
1.pl	sinan sutos	tou	togweydi
2.pl	negan nagegos nageta	nou	noadi
3.pl	kuran koregos koreta	oto	

The following elements in the easten group can be regarded to denote person:

1.ps	s
2.ps	n
3.ps	t, k

All these elements occur in other languages of the western group. The relationship t:s:i/y (here in the 1st person) has been pointed out several times.

The other formatives are less easily defined, and it is not certain whether the 2nd person contains more than one person element. The existence of plural markers is probable.

4.2 SUBJECT MORPHEMES

Lukas (1951/52) gives the following paradigm for the Zaghawa verb ya 'drink':

1.sg		ya	g	i	1.pl		ya	d	i
2.sg		ya	l	i	2.pl		ya	b	i
3.sg.	ki	ya		ri	3.pl	ki	ya		ru

The person elements of the 1st and 2nd person differ in singular and plural, while in the 3rd person they are identical, but in the plural an evidently plural element u is added. Petráček (1975) points out the correspondence between l in Zaghawa and n in Berti being the subject morpheme of the 2nd person. The correspondence l:n in Zaghawa itself is documented by Tubiana (1963) e.g. keni = keli 'ram'

Pétraček (1975) shows for the verb in Berti the following formatives:

	class 1		*class 2*			*class 3*	
1.sg				gi	-s	gi	-s
2.sg	n			gi	-n	gi	-n
3.sg	Ø		ki		-s	gi	-s
1.pl	t			di	-s	di	-s
2.pl	n	-n		zi/ni	**-n**, gi -n	ni	-n, gi -n/-zi
3.pl	Ø	-n	ki		-n	gi	-n

We have to be speculative to make more than vague and tentative statements about the Berti verb. The person elements of class 1 show without much guessing the affinity with other Saharan languages. In the 2nd and 3rd plural the additional n most likely indicates plurality. In class 2 the 3rd person is marked by the prefix ki (or k), n in the 2nd and 3rd plural of classes 2 and 3 may also be a plural element. The role of the final s is not clear, the function of gi, di, ni, etc. is also unresolved. It may be that these elements contain the person or tense element or are a combination of both. Unfortunately we have no idea how accurately these forms were recorded. Petráček himself admits these uncertainties.

The set-up of the Zaghawa verb and the recognition of the person morphemes

	pronoun	*subject morpheme*		*object morpheme*	*possessive*
1.sg	T	T		T	T
2.sg	N	N?	B	N	N
3.sg	T	T or K		-	T
1.pl	T	T		T	T
2.pl	N	N?	B	N	N
3.pl	T	T or K		-	T

The 2nd person elements marked with ? are questionable (cf. 2.5).

4. PERSON CONTAINING FORMS IN BERTI AND ZAGHAWA

The eastern group of the Saharan languages is the least known of this family, therefore we face a number of unresolved problems. It is not possible to trace all forms containing person in the eastern group. However, because of the better knowledge of the other Saharan languages we are able to come to some reliable statements about the relationship between Berti/Zaghawa and the western group.

4.1 PRONOUNS

The analysis of the pronouns in Berti and Zaghawa is not always clear, though some relationships to the western group can be traced.

	Berti (Petráček 1966)	*Zaghawa* (Chalmel 1931)	*Zaghawa* (Lukas 1978)
1.sg	su	ei	aydi
2.sg	negei	na	naadi
3.sg	korei	oto	
1.pl	sinan sutos	tou	togweydi
2.pl	negan nagegos nageta	nou	noadi
3.pl	kuran koregos koreta	oto	

The following elements in the easten group can be regarded to denote person:

1.ps	s
2.ps	n
3.ps	t, k

All these elements occur in other languages of the western group. The relationship t:s:i/y (here in the 1st person) has been pointed out several times.

The other formatives are less easily defined, and it is not certain whether the 2nd person contains more than one person element. The existence of plural markers is probable.

4.2 SUBJECT MORPHEMES

Lukas (1951/52) gives the following paradigm for the Zaghawa verb ya 'drink':

1.sg		ya	g	i	1.pl		ya	d	i
2.sg		ya	l	i	2.pl		ya	b	i
3.sg.	ki	ya		ri	3.pl	ki	ya		ru

The person elements of the 1st and 2nd person differ in singular and plural, while in the 3rd person they are identical, but in the plural an evidently plural element u is added. Petráček (1975) points out the correspondence between l in Zaghawa and n in Berti being the subject morpheme of the 2nd person. The correspondence l:n in Zaghawa itself is documented by Tubiana (1963) e.g. keni = keli 'ram'

Pétraček (1975) shows for the verb in Berti the following formatives:

	class 1		*class 2*			*class 3*	
1.sg				gi	-s	gi	-s
2.sg	n			gi	-n	gi	-n
3.sg	Ø		ki		-s	gi	-s
1.pl	t			di	-s	di	-s
2.pl	n	-n		zi/ni	**-n**, gi -n	ni	-n, gi -n/-zi
3.pl	Ø	-n	ki		-n	gi	-n

We have to be speculative to make more than vague and tentative statements about the Berti verb. The person elements of class 1 show without much guessing the affinity with other Saharan languages. In the 2nd and 3rd plural the additional n most likely indicates plurality. In class 2 the 3rd person is marked by the prefix ki (or k), n in the 2nd and 3rd plural of classes 2 and 3 may also be a plural element. The role of the final s is not clear, the function of gi, di, ni, etc. is also unresolved. It may be that these elements contain the person or tense element or are a combination of both. Unfortunately we have no idea how accurately these forms were recorded. Petráček himself admits these uncertainties.

The set-up of the Zaghawa verb and the recognition of the person morphemes are much more clearly illustrated by Lukas (1951/52) by examples from verb classes 1 and 2. Our morpheme division here differs slightly from Lukas and from Petráček (1975) who referred to the same examples.

Class 1 ge 'lay down'

	sj	*base*	*pl*			
1.sg	e	ge		>	ege	'I laid down', etc.
2.sg	le	ge		>	lege	
3.sg	Ø	ge		>	ge	
1.pl	te	ge		>	tege	
2.pl	le	ge	lu	>	legelu	
3.pl	Ø	ge	lu	>	gelu	

Class 3 lo + l 'see'

	base	*sj*	*base*	*sj*				
1.sg	lo		e?	g	i	>	loegi	'I saw', etc.
2.sg	lo		e?	l	i	>	loeli	
3.sg	lo	gi	l		i	>	logili	
1.pl	lo		e?	d	i	>	loedi	
2.pl	lo		e?	b	i	>	loebi	
3.pl	lo	gi	l		u	>	logilu	

The subject morpheme for the 1st singular in verb class 1 is represented by e. One may suspect that an original consonant (k, g) was dropped. In class 3 it is not clear whether e in the 1st and 2nd persons and l in the 3rd person are the auxiliary verb root corresponding to n in Kanuri and Teda/Daza, or (especially with regard to the vowel e) whether they are other formatives. However, it is quite likely that l is the equivalent of the auxiliary n, which is a very essential formative for class 3 verbs in Kanuri and Teda/Daza. This assumption is strenghtened by the comparison of verb forms in the imperative in Kanuri and Zaghawa:

Kanuri : wu - n - e
Zaghawa: lo - l - o 'look'

4.3 OBJECT MORPHEMES

There are only very few object bearing forms quoted for the eastern group of the Saharan languages. Petráček (1966) gives two examples for Berti, the first of them was earlier recorded by MacMichael (1920):

s - in 'give me/us'
k - in 'I give you (sg/pl)'

The 2nd person element k, provided that this verb form was accurately recorded and interpreted, deviates from 2nd person elements in other Saharan languages. It should also be remembered that some Berti pronouns bear in addition to the expected n element in the 2nd person also the consonant g, e.g. **negei**, **negan** (cf. 4.1 above). This may be interpreted as an additional element for the 2nd person. However, the limited material available does not allow a very reliable statement on this issue. More obvious and familiar is the 1st person object morpheme s (< t), a common feature in all Saharan languages.

4.4 POSSESSIVES

The possessives in Berti are closely linked with the pronoun, to which a suffix -si in singular and -su in plural is added.

1.sg	su - si	1.pl	su - su
2.sg	naga - si	2.pl	naga - su - gos
3.sg	koro - si	3.pl	?

I have restricted myself to the discussion of the person elements in the Berti and Zaghawa languages, leaving out the other formatives. In my opinion the numerous queries and uncertainties allow the reconstruction of person elements in the eastern group only on a tentative basis (cf. 5. below).

5. THE PROTO-FORMS OF PERSON ELEMENTS IN SAHARAN LANGUAGES

I have illustrated in a greater detail the person-containing forms in Kanuri, mainly because of the fact that the knowledge about the morphological and phonological structure of Kanuri is more extensive than of any other Saharan language. The detailed studies of Teda/Daza by Lukas (1953) and Le Coeur (1956) allow reliable statements about this language also. The records of the eastern group, which include Berti and Zaghawa, do not give sufficient information about the person elements, but their comparison with the other branch of Saharan gives some evidence for the relationship of person elements within this language group. In the following table the distribution of person elements in each of the Saharan languages is presented. Though Berti and Zaghawa are considered to be two distinct languages, they are included here in one category because of their close relationship and their few available data.

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Class 3 lo + l 'see'

	base	*sj*	*base*	*sj*				
1.sg	lo		e?	g	i	>	loegi	'I saw', etc.
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K.A. Jarrett

The Development of the Kanuri Aspect System within Western Saharan

1. INTRODUCTION

The Saharan languages have been classified into two groups by Cyffer. The eastern group BERTI consists of Berti and Zaghawa, whilst the western group is divided into two: KANURI consisting of the Kanuri and Kanembu dialect clusters, and TEDA consisting of the Teda and Daza dialect clusters.

To date the only major publications on TEDA (T) are Jourdan 1935, Lukas 1953, and Le Coeur 1956. Jourdan and Lukas deal with various Daza (southern) dialects, although Lukas makes occasional reference to Nachtigal's unpublished material on a Teda (northern) dialect. Le Coeur covers both Teda and Daza but presents them as single dialects rather than as dialect clusters, since he rarely mentions variations within Teda or Daza. It is sometimes difficult to reconcile these three separate accounts of T particularly with respect to the existence of certain verb paradigms, the privilege of occurrence of aspectual suffixes, and sometimes even their exact form. Further research encompassing the whole range of dialects in the T complex is needed to clarify these discrepancies.

KANURI (K), in particular the Kanuri dialects, has been studied intensively by a number of scholars. It shows more homogeneity than the T group. K also displays greater simplicity than T in most areas of its grammar, particularly with respect to verb structure. The following are specific cases of K simplification which have a direct bearing on topics dealt with in this paper.

a) T possesses a plethora of postpositions and conjunctions; K possesses fewer, but these often have wide application and complex functions.

b) T possessive suffixes are marked for singular/plural distinctions of what is possessed (as well as possessor). In T a few verb roots occur with a singular object, a different or modified root occurring with a plural object. These particular singular/plural distinctions do not exist in K.

c) T possesses one class of verbs which have subject prefixes (Class 1) and two classes of verbs in which the subject markers are suffixed (Classes 2 and 3). K does not have this class of verbs with subject prefixes - the oldest verb

class. Instead the K cognates of Class 1 verbs take subject suffixes and are now indistinguishable from original Class 2 verbs. The T Class 1 verb forms have undergone so much change and contraction (more so than Class 2 verbs) that a basic tone pattern cannot be assigned to any verb root. The K cognates of these Class 1 verbs display no greater "irregularity" than cognates of Class 2 verbs and each root possesses an unchanging basic tone pattern. K possesses far fewer of the "older" Class 2 verbs (including ex-Class 1 verbs) than T.
d) T possesses composite verb forms (called "Zustandsformen" by Lukas) which are no longer extant in K.

From a comparative study of Western Saharan languages it is obvious that certain processes of change (discussed below) were/are taking place. In K the speed of change was accelerated and their influence more pervasive than in T. Furthermore K has been innovative in developing new structures from the ruins of the old, particularly with regard to the aspect and subject marker systems. Like any "language of wider communication" K (especially Kanuri) has been simplified and streamlined as it was used or adopted by generation after generation of "foreign" ethnic and linguistic groups. The more isolated Teda and Daza have retained more of the original structure of Western Saharan. This hypothesis forms the basis of the present paper.

Lukas commented on the marked similarity in verb structure between T and K but added: "Die Gleichheit betrifft vornehmlich die Konjugation, weniger die Anzahl und die Gestalt der Aktionsarten" (Lukas 1953:xv). This paper examines the apparent lack of concord between the two aspect systems and attempts to show how the K system has developed.

I am using the term "aspects" as a cover-all term for the whole set of verbal affixes dealing with tense/aspect/mode. Thus "aspect" refers primarily to morphological and not universal semantic categories. I believe that the morphological base of "aspects" must be understood first before the highly complex semantic superstructure of "aspect" can be properly investigated.

2. THE TEDA AND KANURI ASPECT SYSTEMS

2.1 TEDA

The tense/aspect affixes of T are described below in terms of their order of occurrence.[1] The form of each affix and the label given to it are based on Lukas. Strictly speaking, Order 5 contains conjunctional affixes, but they are included here because of the way they are merging with the aspectual suffixes proper.

1	Verb Stem	2	3	4	
		Opt. -ε*			
Fut./Imp.		Aor. -i/-u	Emph. -i*	Perf. -dε	Te
sV-			Neg. -ní/nní		Re
			Progr. -ge		

In the following examples the verbs used are **ta** 'have' 'hear' and **buzz** 'sit down'.

dannɔ́ɔ	< *ke+ta+u+nní+gɔ	'when he doesn't have'
gəsəga	< *ke+kəs+u+ge+ga	'which he will do'
saˀassu	< *sV+bazz+u	'hear! (pl)'
duzzənnā́	< *tV+buzz+u+nní+ga	'that on which I didn'

It is obligatory that the verb stem take an Order 2 af are optional. There are restrictions on the co-occurrence terisk indicates those affixes which may not be followed by suffixes. The Future/Imperative sV- must be followed by th the Aorist is the only affix which can co-occur with the Fu Perfect -dε cannot be followed by the Relative -(g)a. The not be followed by the Perfect -dε.

2.2 KANURI

In an article entitled "Kanuri Aspects Reconsidered" I systems propounded by Lukas (1937), Schubert (1971-3), Cyf Hutchison (1976). I then put forward my own analysis of th tem. The following table of the K affix order is based on

1	Verb Stem	2	3
		Hortative -é/-ó	
		Conjunctive -è	
		Emphatic -í	Associative -
		Punctiliar -ò	
Future ti-		Negative -ní	
Past ki-		Resultative (´)nà	

The temporal prefixes ti-/ki- must be followed by one fixes; Punctiliar -ò, Negative -ní, or Resultative (´)nà.

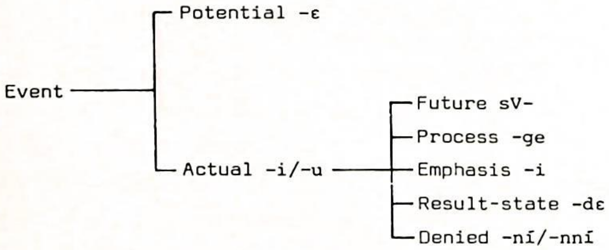
Because of the problem of differing terminology it is related affixes, whether this relatedness is due to the form of the affix or its meaning. Where significant, variant T forms as recorded by Lukas or Le Coeur are added in parentheses after the main form given by Lukas.

TEDA	*KANURI*
Future sV-	Future ti-
Emphatic -i	Emphatic -í
Negative -ní/-nní	Negative -ní
Aorist -i(-e)/-u(-o)	Punctiliar -ò
	Conjunctive -è
Optative -ɛ	Hortative -é/-ó
Perfect -dɛ	Resultative (´)nà
Progressive -ge(-gi)	Stative -ìn

3. DEVELOPMENT OF THE KANURI ASPECT SYSTEM

3.1 SIMPLIFICATION

Certain facts about the T aspect system become clear if Affix Orders 1-4 are used to form the basis of a network diagram. Optative and Aorist are renamed Potential and Actual to give a clearer understanding of the "choices" involved. Other suffixes have also been renamed, but all are readily recognizable.



The network diagram shows two major choices or divisions - Actual and Potential (the obligatory Order 2 affixes). Only Actual is further developed, since Potential remains a final choice i.e. it cannot be followed by Order 3 affixes. This shows a serious imbalance in the system. But not only is Potential totally undeveloped, it has even been weakened by the take-over of its "imperative" function by Future (one of the subdivisions or choices of Actual). Thus the original major distinction Actual versus Potential had nearly lost its significance, and the entire system was ripe for readjustment.

In K a levelling operation was carried out to restore balance to the system. Actual and Potential lost their superordinate status and were placed in the same category as the other previously subordinate aspects. Thus K created a single simple category of coequal aspects as can be seen in the K affix order table above. (See Note 1 for indications that some kind of reanalysis or reordering is also taking place in T.)

3.2 EXTENSION

3.2.1 The Genesis of the Conjunctive -è

In K not only did the Aorist lose its subordinate status, but it was also split into two independent aspects - Punctiliar and Conjunctive. Lukas assigns three major functions (almost Aktionsarten) to the Aorist: "aorist", "conjunctive", and "habitual" (Lukas 1953:173-4). In K "habitual" is included in the Stative (the only imperfective aspect), "aorist" is covered by the Punctiliar, and "conjunctive" by the Conjunctive. This bifurcation of Aorist -i/-u into Punctiliar -ò and Conjunctive -è has an obvious morphological base.

Lukas gives the normal form of the Aorist suffix as -u with a second form -i occurring in a few verbs. As mentioned above in some dialects these suffixes occur as -o and -e respectively, the exact shape of the K Punctiliar and Conjunctive suffixes. There is no clear-cut pattern in the occurrence of -u/-o and -i/-e in T. Some Class 1 verbs take the suffix -i in the singular and -u in the plural. Others take -u in both singular and plural. Still others take -i in both singular and plural forms. In Class 2 verbs -i occasionally occurs in 3rd person sg. forms, but in all other cases the Aorist suffix is -u.

It is my opinion that -i represents the original Aorist suffix, the -u being part of a plural marker -tu. Lukas, on the other hand, regards -u as the Aorist suffix and -it- as the plural marker (Lukas 1953:63). Lukas' analysis does not account for the exceptional -i suffix. My analysis leaves me with the problem of explaining why the -u of the plural affix occurs commonly in singular verb forms. I would like to suggest that -u began to be *reanalysed* as an aspect suffix and so spread to singular forms replacing the original -i. This replacement spread almost totally through the newer Class 2 verbs (except where a stem-final -a has already coalesced with -i). There are phonological traces of an original -i in a couple of Class 2 verbs and a few instances of existing -i in certain verbs from a particular dialect where the cognates in the other dialects have -u.

Furthermore I suggest that K made use of this reanalysis in a more creative way. Instead of the -i/-e suffix being lost as its role was taken over by -u/-o, it was retained and assigned one of the major functions of the Aorist - namely the "conjunctive" Aktionsart.

3.2.2 Temporal Prefixes

The Future sV- is the odd one out both semantically and morphologically in the T aspect system. It is the only "tense", and it is the only prefix. The major trend in the development of Western Saharan verbal systems was towards ***suffixation***. Not only were new aspectual categories created through suffixation of appropriate morphemes (for details see the following sub-sections), but also subject markers which were prefixed to Class 1 verbs became suffixes in the "newer" Class 2 and 3 verbs. Also the Applicative affix -kV- which was originally prefixed directly to the verb root has been placed within the verb root in some T Class 1 verbs e.g. 2nd person sg. Applicative Progressive of tuzz 'stop': ntuguzzəge < *n+tu-kV-zzəge < *n+kV+tuzzəge. In view of this trend towards suffixation, the fact that the Future is realized by a prefix testifies to its antiquity.

In T the Future is inextricably linked with the Aorist (see 2.1 above). But once the Aorist lost its superordinate status and became merely one of the aspectual choices in K, the way was open to extend the use of Future to other aspects where it was semantically appropriate, i.e. Negative and Resultative as well as Punctiliar. In K the Future is not used at all in the Hortative (Imperative).

Furthermore in K Future was expanded by the introduction of a Past prefix ki- to form a full-blown category of Tense. This category of Tense contains a three-way temporal contrast: Future ti-, Past ki-, Present/Unspecified Ø. Thus in K the combination of Tense with the Order 2 aspect suffixes gives the following theoretical possibilities.

Punctiliar		*Resultative*		*Negative*	
ki-	-ò Past	ki-	(´)nà Past	ki-	-ní Past
ti-	-ò Future	ti-	(´)nà Future	ti-	-ní Future
Ø	-ò Unspecified	Ø	(´)nà Unspecified	Ø	-ní Unspecified

Each of these possible forms has been recorded at one time or another within the K group of dialects. The three Punctiliar paradigms are found in the modern Yerwa (Maiduguri) dialect. The three Resultative paradigms were recorded in the Gazir dialect studied by Koelle (who called them the "Participial Mood", 1854). The three negative paradigms were recorded in the Bilma dialect by Noel (1923).

Lukas noted that in T the Future occurred only rarely. In K too, Future forms are not common, and indeed no Future paradigms exist in some dialects (e.g. Manga). On the other hand, the newer Past paradigms are extremely common in all Kanuri (but not Kanembu) dialects.

The origin of the K Past prefix is uncertain. I suggest that it is derived from **ki**, the 3rd person sg. Aorist of the Class 1 verb **kik** 'to be' as recorded by Nachtigal (Lukas 1953:115). **ki** 'it was', being in the "conjunctive" Aktionsart of the Aorist, was originally independent of the major verb it preceded. It was then incorporated into the main verb itself. Traces of this development are still descernible in both Kanuri and Kanembu.[2]

This evidence from Kanuri and Kanembu (Note 2) indicates that the Past marker **ki-** was indeed a later addition than the Future, and therefore **ki-** was not an original temporal prefix which T somehow "lost". Another case where **kik** 'to be' has been incorporated into the T - K verb structure is dealt with in Section 3.3.2.

3.2.3 The Associative -gà

The functions of the T Temporal **-gɔ** (which like the German "wenn" has the meaning 'if/when') are assumed in K by the Associative **+(+C)à** as identified and described by Hutchison (1976, 1980). He assigns a very general form to the Associative, but here it is characterized by an original and more specific form **-gà** for the sake of simplicity and comparison.

Not only does the Associative **-gà** assume the functions of the Temporal **-gɔ**, it also performs some of the functions of the Relative **(g)a**. Le Coeur (1956) makes the following observations on the origin and identity of the latter suffix:

> Il est facile de reconnaître dans ce suffixe **a** qui relie un verbe à un nom le même suffixe a qui relie deux noms entre eux.... Le daza accuse encore davantage cette identité en renforçant cet a en **ga**.... Parfois le **ga** se nasalise même en **ŋa**, après le verbe comme après le nom. (pp. 71-2)
>
> Le suffixe **ŋa** ou **ga** est un véritable nom qui signifie "qui a rapport à". On peut souvent le traduire par "pour", et, dans beaucoup de cas, il se confond presque avec le génitif. (p. 38)

Hutchison (1980: Section 3) defines the common characteristic of all uses of the Associative thus: "It in some ways predicates the existence of the noun-phrase it marks and usually relates that noun-phrase to some other constituent."

The common ground between these two definitions is obvious. More significantly perhaps the Associative and the -ga form of the Relative are both used to mark direct objects.

The relation between Associative gà and Relative -(g)a is clear, but the origin of -ŋa and its relationship to -ga is not clear cut. -ŋa is obviously composed of n+ga, but the identity of n has yet to be established.

Lukas sheds light on the relationship between -ŋa and -ga in his section on "genitival" demonstratives. He gives two suffixes which have the identical meaning 'that of, belonging to' namely -ŋa and -(g)u. The latter has the plural form -a (-gu+a > -ga > -a) (Lukas 1953:36-7). These two demonstratives are interchangeable in their genitival functions but according to Lukas -ŋa alone has a further function as a relative particle in relative clauses. However there is good reason for claiming that both suffixes occur in relative clauses, since the Relative suffix -(g)a (always -a in Lukas) can be identified as the plural "genitival" demonstrative -a. The Relative Aorist and Relative Progressive forms are used only when the head noun of the relative clause is *plural* and non-definite ("unbestimmt"). When the head noun is singular and definite -ŋa is used instead (Lukas 1953:179).

Thus both -ga and -ŋa are basically "genitival" demonstratives. K has coalesced -ga with the phonetically similar and semantically not too dissimilar -gɔ to form the more general Associative -gà. The highly significant relationship between -ŋa and the K resultative -nà is discussed in Section 3.3.1.3.

3.3 PARALLEL DEVELOPMENT

3.3.1 Perfect -dɛ *and Resultative* -nà

Although the suffixes -dɛ and -nà are totally unrelated as regards phonological shape, they are closely related semantically and their syntactic functions, since both are basically anaphoric demonstratives.

3.3.1.1 The scope of Teda -dɛ

In Lukas (1953) there are four "separate" morphemes with the same phonemic shape:

(a) demonstrative suffix -dɛ/-dɛ̄/-de/-dē
(b) suffix for forming adjectives from nouns -dɛ/-de
(c) participle suffix -dɛ̄/dē
(d) perfect suffix -dɛ/-de/-dē

However, these four suffixes can be regarded as exponents of a single morpheme with a basic relational/associative meaning.

The anaphoric demonstrative is given the meaning "this, the afore-mentioned, as for", the adjectival suffix is given the meaning "possessing"; both have a plural form **-da**. The participle (active for Class 1 verbs and passive for Class 2 verbs) also has the meaning "possessing", i.e. possessing the (perfective) quality of the verb's action. Again a plural form **-da** exists (for the passive participle). The Perfect represents an action in its completeness, and is also used in subordinating temporally antecedent events. In other words the Perfect relates the significance of a previous event to the "now" of the utterance/discourse.

Two examples of **-dɛ** given by Lukas do not fit neatly into any of his four categories. They involve **-dɛ**/**-da** being added to Progressive verb forms. Lukas has to expand his simple adjective formation morpheme so that it can include substantive formation as well. This use of **-dɛ** after the Progressive as well as the Aorist led Le Coeur to set up a "deuxième forme" of both aspects.

In conclusion **-dɛ** can be regarded as a relational/associative suffix. It associates certain characteristics with an object - functions a), b), and c) - or with a situation - function d). It is therefore not surprising that in K the Associative performs the first ("as for") and second functions of **-dɛ**, and it also performs the function of **-dɛ** in the "Temporal auf ɛdɛ".

3.3.1.2 The Relationship of -dɛ *to* -ŋa *and* -ma

In section 3.2.3 it was shown that **-ŋa** is basically a "genitival" demonstrative, and it has been shown that **-dɛ** is also basically a demonstrative with the meaning 'possessing'. Although the area of overlap in meaning is extensive, particularly when relating two nominals to each other, **-ŋa** has a situational bias or basis which Le Coeur believes is due to its original meaning as a substantive. While **-ŋa** expresses an external situation or relatedness, **-dɛ** signifies more an internal or inherent characteristic. The following composite noun-phrases illustrate the point (Le Coeur 1956:46):

gore šaiŋa	'pot pour (le) thé'
tinne kobde	'datte à noyau (opposé à la datte dénoyautée)'

Before discussing the relationship between T **-ŋa** and K **-nà**, mention must be made of yet another T demonstrative suffix. Lukas says that the suffix **-ma** is the most common but also the weakest of the demonstratives. Like **-dɛ** it can have the meaning 'as for'. Like **-dɛ** it is attached to Class 1 verbal nouns to form an active participle. Furthermore, when **-ma** is attached to the Aorist it forms a verb paradigm called the "Partizipialmodus" by Lukas, e.g. **wurcin-ma** 'he robbing, the one who robs, the one who has robbed'. This "participial" form is similar to Lukas' examples of the Progressive plus -dɛ.[3]

3.3.1.3 *The Relationship between TEDA* -ŋa *and KANURI* -nà

It is my contention that K -nà and T -ŋa are reflexes of a Western Saharan demonstrative morpheme. Furthermore I maintain that the function of -nà is an amalgamation of specific aspectual functions of T -dɛ, -mà, and -ŋa.

There is evidence from Kanembu that -nà is the K counterpart of T -ŋa. In the Kaidi dialect **nà** exists as a demonstrative particle, which can also function in relative clauses in a similar manner to T -ŋa (Lukas 1931:29).[4]

Whether K -nà is derived from n plus the fuller form of the Relative (***n+ga**) or from **n** plus the simple vocalic form of the Relative (*n+a) is a matter of conjecture. Whatever path of development was followed, K -nà is undoubtedly the equivalent of T -ŋa. As yet I have no explanation of why K **-nà** is always preceded by a high tone.

The development of the function of K -nà is in many respects parallel with the development of -dɛ, -ŋa, and **-ma**. One hundred and fifty years ago K **-nà** was used to form what was a purely "Participal Mood" similar to the T "Partizipialmodus" based on **-ma**. In K, however, the "Participial Mood" had a three-way temporal contrast, thanks to prefixed temporal markers (Koelle 1854:89-92).

However, -nà became capable of being related to the prevailing situation - the "now" situation within the utterance/discourse. Thus the -nà paradigms were freed from subordination to a head noun, and so became grammatically independent.[5] Since the independent "Participial" form referred to the "now" situation, no temporal distinction was possible, and so the independent form carried no temporal prefixes. This prefix-less form has taken on the "perfect" Aktionsart, and has been regarded as a separate Perfect aspect by other scholars. For example the independent form **lèzə́nà** has the meaning 'the present situation is characterized by *he went*' and so is translated into English by 'he has gone'.[6]

However, K has not entirely lost the "Participial" function of the Relative aspect. First, prefix-less forms occur very commonly in relative clauses (with or without an anaphoric demonstrative particle -də). Only one other positive aspect, the imperfective Stative, can occur in relative clauses. Secondly, a Future form still exists which is attached to a head noun. This form can be translated equally by a participial or a relative form in English e.g. **àwó wúzánnà** 'a thing which will be seen, a to be seen thing'. It was the existence of this Future form which caused me to regard the prefix-less -nà paradigm as

one member of a broader Resultative aspect rather than a
right, i.e., Perfect.

3.3.1.4 *Summary*

In Western Saharan there were a multiplicity of demo
meaning was very similar and whose functions were interwo
that each dialect followed a slightly different course of
functional scope it gave to each morpheme. Thus K -nà per
are performed by four different morphemes in T; -ga/ŋa, -d
T uses -dɛ as the Perfect suffix and -ŋa as the relative pa
uses a prefix-less -nà form for the "perfect" Aktionsart an
particle. The Kanuri suffix -ma combines some of the funct
some (but not all) functions of T -ma.

3.3.2 *Progressive* -ge *and Stative* -ìn

Lukas has suggested a strong morphological link for thes
parate forms in that they are identical with the postposition
tively which both mean 'with' (Lukas 1953:65). The voiced va
T postposition are recorded by Le Coeur. The basic form of th
position can be regarded as -ìn rather than -n (Schubert 1971-
979).

These two forms ke and ìn are, I believe, derived from the
ik/kek 'to be'. The 3rd person sg. Aorist was originally ki/k
3). Thus if the initial velar is regarded as having been eli
n fate for intervocalic velars) the only real difference betwe
rms is the final -n.

The K form -ìn (< *kin) is best understood as the stative f
m") of the extensively used auxiliary verb n 'to think, say'.
" are created by prefixing singular forms of kik 'to be' to th
original 3rd person sg. Aorist "Zustandsform" of n was kin.
It was even possible, however, for the final -n of this verb
ped, unless followed by a suffix. Therefore the Progressive/S
x of *both* T and K could be derived from the "Zustandsform" ki
ariant form where n is dropped and K used the fuller form whe
d.

3.3.3 *The Emphatic* -i

I have demonstrated that the Order 4 and 5 affixes are relational/associative markers whose domain has spread from nominal to verbal forms. It is therefore quite plausible that Order 3 affixes are also derived from one grammatical category. In this case as the Progressive/Stative suffix was originally an independent verb form which then began to function as a postposition, Order 3 affixes could all be verb forms which can also be used as postpositions.

There exists in T a postposition almost identical phonetically with the Emphatic suffix -i. This suffix -yi/-i denotes the subject of a sentence (Lukas 1953:164-5). Since T and K do not have a system of "case" suffixes, it is best to regard the function of -yi/-i as giving *prominence* to the noun it follows.[7] The concepts of prominence and emphasis are closely related. If prominence is given to a verb form then it will carry the range of meaning expressed by the Emphatic -i.

Furthermore, there is a verb form which is homorphous with this postposition of prominence, namely yi 3rd person sg. Aorist of the auxiliary verb n 'to think, say'. The basic, wide meaning of n would allow the 3rd person sg. yi to be used as a prominence-giving postposition. Since ke/in is derived from the 3rd person sg. Aorist of a common auxiliary verb, the identification of -yi/-i (and eventually Emphatic -i) as the 3rd sg. Aorist of the second common auxiliary verb in T and K is, in my opinion, tenable.

3.3.4 *The Negative* -ní/-nní

Following my suggestion of a common origin for Order 3 affixes, The T Negative suffix (-ní in T Class 2 verbs and -nní in T Class 1 verb) could be derived from the 3rd person sg. Aorist of an auxiliary verb.

One verb benn/bend possesses the three necessary prerequisites; a similar phonetic form, a negative meaning and an auxiliary function (cf. wàndé/wàndógó the imperative forms of an obsolete verb used in K negative imperative constructions). It has been cited only in its Temporal form bennoo/bendó "if it is not present" (Lukas 1953:121). I suggest that the 3rd person sg. Aorist was *benní/bendí (bennoo < *benní+gɔ).[8] The loss of the initial syllable in the change *benní > -nní (as opposed to the loss of the final syllable in the other Order 3 suffixes -ke and -yi) is due to two factors. The single consonant b is weaker than the geminate nn, and since the Negative suffix has a high tone *benní was almost certainly "endungsbetont" i.e. the suffix bears the stress (high tone), whereas in "stammbetont" verbs the stem bears the stress.

The variation in the verb stem would account for the variation -nní/ndí in T 3rd person Negative forms (Lukas 1953:108). The reduction from the geminate nn in the older form of the suffix to the simple n of the "newer" form is readily understandable, since the reduction from geminate to simple consonant is a common process in T and K.

4. CONCLUSION

If the analysis presented in this paper is correct, then not only are certain things known about the development of the K aspect system but also about the structure of the Western Saharan (WS) system itself, namely:

(a) There were originally two basic divisions in the WS aspect system (Affix Order 2);

(b) a major sub-division was created by means of 3rd person auxiliary verb forms (Affix Order 3);

(c) a minor sub-division was created by means of relational/associative morphemes (Affix Orders 4 and 5);

(d) K constructed a new basis for its aspect system by merging Affix Orders 2 and 3 (and the relational -nà) into a single class of co-equal aspects, and by creating the category of Tense from the Future prefix.

While (d) has implications only for the study of K, the first three points have a much wider significance. They provide valuable direction for future research into the aspect system of the Eastern Saharan group (BERTI).

This paper will, I hope, serve two practical purposes. It will help towards the establishment of a Proto-Saharan aspect system. Secondly, by delving into the origins of the various aspect suffixes it will advance our understanding of the *use* of these aspects in T an K.

Finally, I would like to put forward the following hypothesis for further research. Elements borrowed from certain grammatical categories were used at one stage in the development of the WS verbal system. At a later stage these *same* elements were used yet again (and again?) to help develop the verbal system even further. Thus a single element may now have a variety of similar forms and perform a variety of (related) functions. The verb kik 'to be' seems an obvious example.

NOTES

1. I have excluded Lukas' unique "Temporal auf εdε" from this scheme for two reasons. Le Coeur places the simple Perfect -dε in the environment Lukas establishes for the subordinate verb form -εdε. Secondly -εdε may be derived from Emphatic -i plus the Perfect -dε (*i+dε > εdε), since the K functional counterpart is derived from Emphatic plus Associative.

The affix order of the Negative -ní/-nní and the Perfect -dε seems to vary according to dialect. For example, in the Kashirda dialect (Daza) studied by Lukas -ní/-nní is best regarded as belonging to Order 3 and as being added onto the Aorist -i/-u. But in the Borku dialect (Daza) studied by Nachtigal it is best regarded as being an Order 2 affix attached directly to the verb stem. The Perfect -dε is an Order 3 affix according to Lukas' analysis, but it must be placed in a separate category - Order 4 - according to the data given by Le Coeur and Jourdan.

2. To form the Causative Conjugation of Kanuri Class 3 verbs an originally independent verb form **yita** is prefixed to the verb stem. The 3rd person subject prefixes can either occur before **yita** or before the post-stem auxiliary verb root **n** (Cyffer 1978:309-310). The same holds true for the Future prefix but not for the Past prefix. The latter can occur only before **n**. Thus ki- occurs only in the newer forms when **yita** had been completely incorporated into the main verb.

In the Objective Conjugation of both T and K, the person object marker is prefixed to the Future. Indeed it is the *only* affix which can precede the Future. In the Objective Conjugation of Kanuri Class 2 verbs there is no opposition Future versus Past, since the Future (Punctiliar) forms may also be used in contexts where the Past (Punctiliar) would be expected to occur (Lukas 1937: 117). However, Lukas does give Objective paradigms of Class 2 verbs in Kanembu. In these examples the Past marker *precedes* the object marker and not vice-versa (Lukas 1931:58-9).

3. The major difference between -dε and -ma seems to be that when -dε is attached to the Aorist focus is centered on the situation resulting from the event, whereas when -ma is attached to the Aorist the focus is on the agent and his performance of the event.

4. In Kanembu **nà** has a second function (joining two imperatives in a temporal sequence) which is not shared by **ŋa**. This second function is performed in T by the "conjunction" **na**. This T "conjunction" **na** also has a demonstrative meaning. Furthermore, in two environments the Kanuri equivalent of the T **na** is the demonstrative **-ma** (Lukas 1953:97, 167).

5. "The Perfect aspect is used to describe completed actions when no specific element of the sentence is being given any particular focus, or is being questioned" (Hutchison 1976:47). This incompatibility with any emphasis-bearing element within the proposition is due to the fact that -nà relates the *whole proposition* to the prevailing situation. Thus the focus is on the situation, not on an element within the clause.

6. "Imperfective" is a marked category in Kanuri, and aspects are assumed to be "perfective" unless they bear the specifically "imperfective" Stative aspect marker -ìn.

7. This prominence should not be equated with topicalization because the latter is marked by the Associative -gà in Kanuri.

8. It seems unlikely that *benní is the Negative of bek 'to be not, not be' as this verb already has a negative meaning in the Aorist.

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Kanuri Word Formation and the Structure of the Lexicon

1. INTRODUCTION

The Kanuri lexicon is replete with derived nominals, many of which are not synchronically recognizable as such. Words, word formatives and word formation processes have entered the language at various points historically, have intermingled and interacted, and the result is a layered, rather complex lexicon, in which many of the perhaps older formatives and processes are no longer productive in Kanuri word formation. This paper will propose derived nominal types which are the products of such older processes, thus breaking down the lexicon into groups that have not been previously suggested. Synchronically productive affixes and processes which have been documented and described by Lukas (1937: 8-21) will not be treated here.

This paper will deal with the basic phonology of the Kanuri syllable and word, and with the phonological and morphophonemic processes involved in the formation of the nominals under consideration. Finite sets of data indicative of processes of at most limited productivity will be presented for each nominal type. The paper will suggest that the truly nonderived and basic members of the Kanuri lexicon represent a very small percentage of the words of the language today.

In an early article, Lukas began to describe certain of the formatives and processes which are treated in this paper. He noted that 25% of the words in Koelle's dictionary (1854:257-434) began with k- (Lukas 1928:214), and recognizing the importance of this he cited significant examples of k-prefixation. He also introduced the importance of n-prefixation. It was that article which inspired the collection of data leading to the present paper.

2. ALPHABETICAL DISTRIBUTION OF KANURI WORDS

Lukas (1937:9) described the Kanuri noun as follows:

> 18. The noun in Kanuri is, in most cases, composed of the root surrounded by affixes. These are called 'formative' affixes, and must be distinguished from the 'derivative' affixes.... Only in a very few instances can the formative affix be separated from the root; it is possible to recognize

> the root only by comparison with other dialects or with related languages.
> 19. Two prefixes (k, n) are very common in Kanuri; this accounts for the fact that so many words start with k and n, and also ng (ng resulting from the combination of n with k).

Using Lukas' own vocabulary (1937:183-253) as a sample, it is worth noting that nearly 25% of his entries are taken up by the letter k, about 13% by n, 6% by ng, and another 7% by entries beginning with the letter g; in all nearly 50%.

The present paper will concentrate on nominals derived through diachronic morphological processes which incorporate Lukas' "formative" affixes. Other related word formation processes will also be described. A source will be proposed for the "roots" to which the "formative" affixes apply in the derived nominals.

3. THE PHONOLOGY OF THE KANURI WORD

The possible forms in which the syllable is constructed in Kanuri are the following: CV, CVC, and V, the latter only as the result of borrowing. The segmental structure of the Kanuri syllable may be predictable on the basis of the position in which it occurs within the word, and as well on the basis of the class of word in which it occurs. Likewise, tone may be predictable as a reflex of the same criteria, i.e. syllable position and word class. If ideophones are excluded, then every word in the basic lexicon ends either with a vowel terminating a CV syllable, or with a sonorant consonant ending a CVC syllable. Within the basic lexicon, non-derived monomorphemic words normally end with a syllable bearing a low tone (though there are exceptions), or a falling tone, the latter being the composite of the basic high followed by a low tone. The bisyllabic word structure is optimal and basic, as in e.g. **dágə̀l** 'monkey', **cígə̀** 'fly', **bə́rì** 'food, meal', **béjì** 'mat', **béwù** 'axe', **tímì** 'teeth', **zúzù** 'hunch, hump'. Monosyllabic members will optimally bear the same tone pattern, which has historically collapsed on one syllable, as in e.g. **bû** 'blood', **dâ** 'meat', **kû** 'today', **shî** 'foot, leg', **kâ** 'cane, stick', **fə̂r** 'horse', **kâl** 'grass type', etc.

Without exception, ideophones never bear a composite tone on a given syllable. Many are level high tone throughout and typically monosyllabic, sometimes bisyllabic, and longer only if some form of reduplication is involved. Unlike the monosyllabic and bisyllabic words of the basic lexicon, ideophones may be of the phonological forms CV, CVC, CVV, and have no restriction on final consonant type. Bisyllabic ideophones are normally CVCVC, and in many cases are derived from CVC either through reduplication or through insertion of a medial liquid consonant. For example, cót/córót/cócórót 'completely, totally'; cús/cúrús 'describes quantity of small things spread out'; cíp/cúr/círíp/cúrúp 'describes exactness of number 10'.

Within the derived nominals formed through the application of the formative affixes, one finds that the underlying root is, when not the result of borrowing, very often a monosyllabic level tone stem, similar in phonological shape to the monosyllabic ideophone, and also to the class 2 verb root as will be shown. Thus I would suggest that the basic core of the Kanuri lexicon is made up of monosyllabic and bisyllabic words of the type described above, and as well of a large inventory of such monosyllabic roots. Once one examines trisyllabic words of Kanuri, there are signs of characteristic derived tone patterns, reduplication, and formative affixes. Borrowing is also a factor in words of greater than two syllables. If a new word entering Kanuri violates any of the above-described constraints on syllable structure, then it will be altered accordingly. The consonant clusters of English borrowings for example are broken up when Kanuricized by the addition of epenthetic vowels, as in fə̀rémàrè 'primary', fə̀rə́sə̀nà 'prisoner', etc. Borrowings that come into the language with a word-final obstruent violate the constraint that words must end in a sonorant consonant. Here final vowel epenthesis of a usually low tone vowel renders them vowel-final words, with coronal consonants undergoing lenition in the resultant intervocalic environment. The Arabic al-suq/as-suq 'market' which is in Kanuri kàsúwù < *k+assuk+ə, has clearly undergone application of the formative prefix k-, vowel epenthesis, lenition, final vowel harmony, and the application of the L-H-L tone pattern characteristic of many of the k-prefixed nominals. Words ending in sonorant consonants which enter Kanuri may not undergo this vowel epenthesis. The Arabic borrowings kə̀nə̂m 'sleep' and kăltàn/kàlgə́tàn 'cotton', have undergone k-prefixation and the application of the characteristic L-H-L pattern, but not vowel epenthesis. Ideophones and bound morphemes like the class 2 verb root which are monosyllabic with level tone and end in a non-sonorant consonant also undergo final vowel epenthesis and consonant weakening before becoming independent derived nominals, with or without formative affixation (see 5.5 below).

4. THE FORMATIVE PREFIX *k*-

Prefixation of k- to underlying CVC/C roots was at some stage a very productive Kanuri word formation process, and it is clearly the reason that today

25% of Kanuri words are k-initial. In its purest form, according to the present analysis, k-prefixation entails a characteristic L-H-L tone pattern (as introduced in 3 above) and trisyllabic word structure, with the final syllable normally an open CV, rather than a closed CVC. Because it is a process which took various forms in the history of the language, one today finds that it manifests itself as k-, kV-, and kVC-.

Kanuri's sister language Kanembu shows an even higher instance of k-prefixation. It is there more paradigmatically complete in its application to the roots of the older class 1 verbs than is the case in Yerwa Kanuri. It is not as apparent in the Tubu group, and there are, as will be shown, k-initial Kanuri words which have a cognate nonprefixed vowel-initial form in Tubu.

In the example sets presented, it is clear that the prefix is made up of k- plus in some cases an apparently epenthetic vowel which may harmonize with the vowels of the stem to which it is applied; in other cases the prefix may be of the structure CVC, made up of k- plus a vowel followed by a sonorant consonant, either r or a homorganic nasal. Since homorganic n is recognized as another important formative prefix, the exact structure of the k-prefixing syllable cannot therefore be consistently determined. Many of the examples presented are clearly in violation of the proposed characteristic trisyllabic L-H-L structure. In order to document this process, all possibly related froms have been presented, whether they violate the constraints or not.

4.1 *k*-PREFIXATION IN FORMING THE POSSESSIVE PRONOUNS

The independent possessive pronouns are clearly derived from their suffixed forms through k-prefixation, and represent the most consistent, paradigmatically complete application of the process that can be documented. The possessive pronoun suffixes are all monosyllabic, with underlying high tone. In the following derivations, the medial high tone syllable may be the result of epenthesis for the purpose of attaining the trisyllabic pattern, or it could be another morpheme. The stem of the 1 S form is suppletive, and probably represents the occurrence of the clitic 1 S subject morpheme -k- of the finite verb form.

	possessive pronoun suffix		*possessive pronoun*	
1S	+nyí	'my'	*kà+gə́+kè > kàkkê	'mine'
2S	+nə́m	'your'	*kà+gə́+nə̀m > kàánə̀m	'yours'
3S	+nzə́	'his/her'	*kà+gə́+nzə̀ > kàánzə̀	'his/hers'
1P	+ndé	'our'	*kà+gń+ndè > kàándè	'ours'

2P	+ndó	'your'	kà+gə́+ndò > kàándò	'yours'
3P	+nzá	'their'	kà+gə́+nzà > kàánzà	'theirs'

4.2 *k*-PREFIXATION IN FORMING THE ORDINAL NUMBERS

The ordinal numbers are formed from the cardinal numbers through p ation of kə́n+ and the suffixation of +mì. In this case a form of k-pre is involved in an infinitely productive process. Perhaps because the k co-occurs with the derivative suffix +mì in this process, the character trisyllabic structure and L-H-L tone pattern are not apparent, as shown following examples.

cardinal number		*ordinal number*	
tìló	'one'	kə́ntílómì	'the first'
ìndí	'two'	kə́níndímì	'the second'
yàkkə́	'three'	kə́nyákkə̀nə̀	'the third'
dégə̀	'four'	kə́ndégə̀mì	'the fourth'
úwù	'five'	kə́núwùmì	'the fifth'

4.3 *k*-PREFIXATION IN FORMING DERIVED NOMINALS FROM LEXICAL N

In the following examples, the form and meaning of the relation pro between lexical noun and k-prefixed nominal vary considerably from one the next.

lexical noun		*k-prefixed nominal*	
bígə̀	'sin'	kàmbígə̀	'quarrel'
bígə́là	'harvest'	kə̀mbúgə́là	'harvest time'
bìské	'game, amusement, play'	kàwə́skè	'celebration, dance
bə́nè	'trouble'	kàwə́nè	'sorrow, suffering'
búné	'night'	kə́mbúné	'nighttime'
dóndì	'sick'	kùndóndì	'sickness'
dùwùlí	'buttocks'	kúdúwùlì	'bone at back above
ìndí	'two'	kə̀nándì	'title of Talba, se Shehu'
lámbó/lámbí	'concern,need'	kə̀lámbó	'need for food'
+máskí	'neighboring'	kə̀máskí	'neighbor'
bə̀làmáskí	'neighboring town'		
ngùròmáskí	'neighboring ward'		
mbə́rshè	'strength, solidity'	kàmbə́rshè	'trust'

nádi	'purpose, expressness'	kànádí	'patience'
nádìn	'on purpose'		
nágə̀	'nut of desert date fruit; kernel, crux (proverbial)'	kə̀nágə́/kə̀náwú	'pregnancy; woman who has recently conceived'
nə́ngà	'cunning, alertness'	kə́nə́ngà	'state of good health, alertness'
ngə́lì	'penis'	kə́ngə́l	'milk of animal that has given birth; semen'
ngə́ríwù	'bastard'	kə̀ngə́rì	'miser'
ngə́rìn	KBU 'poor'		
+nyí	'(neg suffix)'	gə̀nyí	'it is not'
sàngí	'shaking/wiggling legs'	gàsáng/gàsàngí	'shaking top foot (crossed legs)'
tígə̀	'body'	kàttígə̀	'skin'

4.4 *k*-PREFIXATION AS APPLIED TO ARABIC BORROWINGS

The following derived nominals contain originally Arabic stems to which k-prefixation has applied. Some of the stems indicated are transliterations of the original Arabic word, and others are Kanuricized versions of originally Arabic stems. Those followed by a + sign are class 2 verb roots of Arabic origin.

Arabic/Kanuri-Arabic stem		k-prefixed nominal	
(al)'adin	'enemy'	kə̀ládò	'enemy'
afia	'well'	kə̀léfà kèléwà	'well, fine'
lèfà+	'greet'		
àsàl+	'hurry, rush'	kàsálì	'inpatience, rush'
gàlá+	'advice, counsel'	kàálà	'advice; royal title'
gálìwù	'rich'	kə̀ngálìwù	'wealth'
gùl+	'say'	?kàwúlì	'speech'
(al)katan	'cotton'	kăltàn/kàlgə́tàn	'cotton'
(al)nom	'sleep'	kə̀nəm	'sleep'
(al)nur	'fire'	kánnú	'fire'
(al)suq	'market'	kàsúwù	'market'
(al)zana	'fornication, adultery'	kə́nzə́nà	'fornication, adultery'

4.5 *k*-Prefixed Nominals with Non-Prefixed Tubu Counterparts

The few examples presented here probably represent only a small portion of the k-prefixed Kanuri words with non-prefixed Tubu counterparts.

Tubu		*Kanuri*	
ágəli/egəli	anvil	**kágə́l**	anvil
alé/elé	thorn	**kàlgɨ̂/kàlɨ́ɨ̀**	thorn
amo/amma	person	**kâm**	person
érdí/írdí	devil	**kə́rdì**	pagan, non-Muslin
medú/meti	this year	**kə́mə́ndè**	this year

5. *k*-Prefixation in Forming Derived Nominals from Verb Roots

The verbs of synchronic Kanuri are divisible into two distinct classes: Class 1 is the older class of verbs, fixed in number, and corresponding within the Saharan branch to Lukas' Tubu verb class 2, and for a very few cognates to his Tubu verb class 1 (Lukas 1953:62ff). Class 2 is the younger class of verbs, all of which are historically accreted forms made up of an originally nonverbal root which today functions verbally through inflection by the finite forms of the class 1 verb **n͜gin** 'say, think'. Kanuri verb class 2 is identical to Lukas' Tubu class 3 with regard both to formation, and cognates. In this section, verb root-based derived nominals from each verb class will be treated separately. A lengthy discussion of the origins of verb class 2 roots is also presented.

5.1 *k*-Prefixed Nominals Derived from Class 1 Verb Roots

It has been observed (Lukas 1937:76-77) that all class 1 verbs have a low tone verbal noun composed of the root and sometimes a final vowel, and that some of them also have a k-prefixed nominal form which in most cases bears the L-H-L tone pattern. Koelle (1854:21) referred to the former as *infinitives*, and to the latter as *abstract substantives* which he said were derived from the former. Lukas (1937:76) reported a difference in usage between the two forms in other dialects, but none in the Yerwa dialect, referring to the former as the *simple verbal noun*, and the latter as the *verbal noun with prefix*. Cyffer (1977:63) stated that in the latter forms, "this prefix has no nominalizing function by itself, it is merely a prefix added to nouns". Given our knowledge of the k-prefix as a nominal formative, it is likely that Koelle's description of the two forms of the verbal noun is (or at least at some time was) the correct analysis of them, and that there are in fact major lexical and syntactic differences between the two. For example, the prefixed form for the class 1 verb whose root is **bù+** 'eat', **kə̀mbû**, more often carries the deverbal nominal meaning 'food' than it does the verbal noun meaning 'eating'. The nonprefixed form **bù** can only mean 'eating'. In no case has the nonprefixed form of a class 1 verbal noun taken on the deverbal nominal meaning in this way.

Of the slightly more than 100 class 1 verbs known to be used in Yerwa Kanuri, approximately one fourth have attested k-prefixed verbal nouns. Another one fourth of them, some of which overlap with the fourth just cited, have additional attested k-prefixed nominals which are semantically deverbal. The members of this latter class have varying tone patterns and morpheme structures, no consistent final syllable structure and thus are distinct from the regular L-H-L trisyllabic forms. In some of these deverbal nominals, another formative affix (+s/zə+) also plays a role. This affix occurs as the medial syllable in trisyllabic nominals between the k-prefix and the final verb root. When this affix occurs in nominals derived from a CVC/C root, the trisyllabic constraint of k-prefixation seems to result in the dropping of the final C of the class 1 root. In the following examples, only those class 1 roots are represented that have either the regular k-prefixed derived nominal, or the more irregular k-prefixed deverbal nominal, these being indicated by a and b respectively.

class 1 verb root		k-*prefixed nominals*	
bá+	'mount'	a **kə̀mbâ**	'mounting; horseback festival'
bù+	'eat'	a **kə̀mbû**	'eating; food'
dí+	'do'	a **kə̀ndó**	'doing; deed'
gá+	'follow'	a **kə̀ngâ**	'following'
ì+	'learn, get used to'	a **kə̀**	'learning'
mù+	'put on, wear'	a **kə̀mû**	'putting on'
		b **kàzə́mù**	'clothes'
rù+	'see'	a **kùrû**	'seeing'
tà+	'grab, seize'	a **kə̀ntâ**	'grabbing, seizing'
		b **kə́ntà**	'possession, belonging'
tí+	'be equal/sufficient'	a **kə̀ntô**	'being equal to/sufficient'
búr+	'migrate'	b **kàzúwúrò**	'migration'
dùr+	'fall (of rain)'	b **kúndúró**	'rainfall'
fár+	'slander'	b **kàsùwá**	'gossip'
gánt+	'possess, acquire'	b **kə̀ngántì**	'possession, acquisition'
kàs+	'run'	b **kàsô**	'running; flight, escape (-prefix)'

kə́nd+	'tie baby on back'	a	kə̀gə̀ndô	'tying baby on back'
lànd+	'shake, churn'	a	kə̀làndò	'shaking, churning'
mèr+	'recover'	b	kàsə́mé	'recovery'
nót+	'commission, wield'	b	kàtùnó	'message'
		b	kə̀ntúwò	'power'
ràg+	'like, love'	b	kə̀ráwó	'love'
rə̀nd+	'hurt, ache'	b	kàsə̀rə́ndò	'pain'
ríndʹ+	'get tired waiting'	b	kàsìríndò	'fatigue from waiting'
sàw+	'winnow'	a	kàsáwò	'winnowing'
yá+	'drink'	a	kə̀nzâ	'drinking'
yí+	'give'	a	kə̀njô	'giving; gift'
yàmb+	'bear, give birth to'	b	kə̀nyámbí/kə̀nzámbí	'giving birth'
tàmb+	III	b	kə̀támbi/kə̀ntámbí	'birth, being born'
yàsə̀rá+	'cough'	b	kàságə́	'cough'
yìmbàr+	'get tired'	b	kàsèmbá	'fatigue'
bàf+	'ripen'	b	kə̀mbáfí	'invulnerability'
də̀gá+	'live'	a	kə̀ndə́gà	'living'
		b	kə̀ndə́gái	'royal reception room'
ís+	'come'	a	kə̀nshê/kə̀nshô, kə̀ndê	'coming; arrival'
nú+	'die'	a	kə̀rmû	'dying; death'
tàd+	'meet one another'	a	kàtàdô	'meeting one another'
tìyèr+	'fail to do'	b	kə̀ntérí	'failure'

5.2 THE ROOTS OF VERB CLASS 2 AND *k*-PREFIXED NOMINALS

Verb class 2 is virtually unlimited in size since any lexical item of Kanuri or of a contact language can today be inflected by the class 1 verb ngin and function as a verb, e.g. in response to a modern need. Class 2 is thus layered, since its members come from a great many sources historically. The following classification of class 2 root types is suggested as a way of revealing the historical development of the class.

1. Lexical nouns may function as class 2 intransitive process verbs, with their required low tone possibly relatable to intransitivity.

kúrà	'big, important'	kùrà+	'become big, important'
málàm	'malam, religious teacher'	màlàm+	'become a malam'
ngéwù	'many, a lot, much'	ngèwù+	'become many, plentiful'
zâu	'difficult, expensive'	zàu+	'become difficult, expensive'

2. Lexical nouns may have transitive and intransitive counterpart class 2 roots. This group is not unlimited like group 1 above, and is very likely an older group.

bánà	'help'	**báná+**	'help'
bàrà	'hunting'	**bàrà+**	'hunt, look or search for'
bárè	'farming'	**bàré+**	'farm'
cídà	'work'	**cìdà+**	'work'

3. Borrowed roots from other languages, which are usually low tone as class 2 roots.

Arabic:	gùl+	'say'	sàlì+	'pray'
English:	cànjì+	'transfer, repost'	wàinà+	'wind (watch, clock)'
Hausa:	gòdè+	'thank'	cìkà+	'fill out, complete (e.g. forms)'

4. Compounds and other derived forms from within Kanuri may as well come to function as class 2 roots, usually of intransitive process verbs.

cî	'mouth, edge'	**cìngál+**	'chop up, slice'
ngál+	'measure off'		
kâm	'person'	**kàmkùrà+**	'become an important person'
kúrà	'big, important'		
fúnò	'loin cloth'	**fùnà+** II	'tuck tail/private parts between legs'
fúnòà	'having a loin cloth'		
súró	'stomach'	**súròà+**	'become pregnant'
súróà	'having a stomach, pregnant'		

5. A small group of class 2 roots appear to be derived through the application of one of the formative affixes to a CV/C root, e.g. the prefixes k+, n+.

dú+	'drive off, chase away'	**kádú+**	'pursue, chase after'
nyè+	'grind'	**gərnyè+**	'crush (with implement)'
mbá+	'float'	**kámbé+/kámbí+**	'swim'
lòlòk+	'pick (nose)'	**kùlòlòk+**	'knock down (mango from tree)'
kə́mə́s+	'squeeze, knead, wring'	**ngímə́s+**	'wink'
kúrnó+ III	'be happy'	**ngúrnó+**	'favor'

6. A significant number of class 2 roots have a synchronically attested ideophone from which they were derived.

kòk	'describes pecking sound'	**kòk+**	'peck at'

bádák	'sound of heartbeat'	**bádák+**	'beat (of the heart)'
sə́lít	'describes slipping and falling'	**sùlìt+**	'slip, slide'
fírát	'pulling sth out suddenly'	**fìràt+**	'strip leaves off branch;
fíyát	'unsheathe suddenly'	**fìyàt+**	'whip, flog'

7. The largest group of class 2 roots (that is except for unlimited gr from lexical nouns) numbers around 800, and its members have no synchron attested source. They are thus bound morphemes, which originally functi some other role in the language before taking on the role of class 2 ver Many appear to be motivated signs from originally onomatopoetic sources. are monosyllabic. I would suggest that these represent the oldest and t original class 2 verb roots.

bò+	'lie down'	**kòl+**	'leave, quit'
cè+	'move, remove'	**lá+**	'dig
cét+	'scrape away'	**lé+**	'touch'
cì+	'get up, stand up'	**lə̀m+**	'become late at night'
cín+	'rub, wipe'	**lə́p+**	'string, create, immerse'
cíp+	'lance, pop'	**lí+**	'grow'
còl+	'poke, stick'	**lím+**	'shrivel up, wilt'
dà+	'stop, stand'	**má+**	'look for, fetch'
dák+	'fear, be in awe of'	**mát+**	'pull strongly, scrunch'
dàm+	'fill up, crowd'	**nə̀k+**	'shake bucket at well bott
dàp+	'prevent, refuse'	**rák+**	'be able to, can'
dé+	'cook, boil'	**rí+**	'fear'
də́p+	'reject, divorce'	**rù+**	'scorn'
dì+	'mix up, prepare'	**sà+**	'start for first time'
dú+	'drive away, chase'	**sàk+**	'drip, leak, filter'
fá+	'wake up, melt'	**sál+**	'chop'
fàl+	'change'	**sò+**	'be still damp, not dried'
fál+	'cross, break'	**sú+**	'stiffen, become rigid'
fàn+	'hear, sense, feel'	**súk+**	'pierce, penetrate'
fàr+	'jump, fly'	**táp+**	'pour down'
fér+	'spread out, lay out'	**tàr+**	'spread out, lay out'
fí+	'pour out'	**tùs+**	'rest, spend time'
fù+	'blow'	**wá+**	'dislike'
gá+	'catch fire'	**wà+**	'spend the night'
gál+	'sharpen by pounding edge'	**wí+**	'loosen, untie'

kà+	'escape, avoid'	yés+	'deviate, branch off'
kár+	'choose, select'	zú+	'push'
kó+	'pass, surpass'	zá+	'stab, poke'

Certain pairs from this group 7 suggest that at some point in the early development of verb class 2, tone change may have functioned as a process by which one class 2 root was derived from another. Though there are exceptions, evidence would suggest that low tone may have been associated with intransitivity, and high tone with transitivity. The following are tonal minimal pairs from group 6/7.

dàm+	'become crowded, fill up'	dám+	'seep, ooze'
fù+	'blow'	fú+	'swell'
kà+	'avoid, escape'	ká+	'open, uncover, reveal'
kèr+	'thicken, solidify'	kér+	'wrap up'
kòk+	'peck at'	kók+	'plant, stick in ground'
sàm+	'distribute, give out'	sám+	'rub on'
tàr+	'spread out, lay out'	tár+	'scatter, disperse'
yèn+	'fish out, scoop out'	yén+	'stretch'
yì+	'dissolve, melt'	yí+	'undo'
yìn+	'breathe'	yín+	'smell, sniff'
zèk+	'scrape, grate, shake'	zék+	'annoy, pester, irritate'

5.3 SPECULATIONS WITH REGARD TO THE ORIGINAL CLASS 2 ROOTS (GROUP 7)

Before presenting k-prefixed nominals formed around the class 2 verb root, this section will suggest how verb class 2 was originally formed, and the source of the original class 2 roots, which I have proposed to be group 6 above.

Ideophones and other nonarbitrary (motivated) signs have traditionally been left to the end of the grammar book, as a sort of weird subsidiary phenomenon with which we are not so familiar vis-a-vis Indo-European languages. Apart from Lukas' collection of nearly 200 specific adverbs (Lukas 1937:133-142), nothing has appeared in the literature concerning onomatopoetic words and ideophones of Kanuri. Perhaps because of their traditional isolation, few have related them to lexical categories like noun and verb. According to the present analysis, Kanuri is a language in which ideophones and other motivated signs are important not only in their independent usage, but also have come to function as stems and roots in a variety of the derived components of the lexicon.

We have seen that the possible forms in which the syllable is constructed are CV and CVC. The phonological makeup of the syllable may be predictable on the basis of the position in which it occurs in the word, and as well on the basis of the lexical category of the word in which it occurs. Similarly, the tone may be predictable as a function of the same criteria. The following is a comparison of the phonological structure of the class 2 verb root (of group 7) and the ideophone.

class 2 verb root	*ideophone*
CV/C and less often CVCV/C, the latter in some cases being derived from a monosyllabic root through the application of formatives	CV/C, CVV, and less often CVCV/C, CVCVV, the latter bisyllabic forms often being derived from or related to a monosyllabic counterpart.
root final C may be any C of the language	final C may be any C of the language
all syllables bear level tones, high and low, no contour tones	all syllables bear level tones, often high, no contour tones
may be repeated/reduplicated	may be repeated/reduplicated
unlimited	virtually unlimited

In English, the verb "go" may be used to describe ideophonic processes and onomatopoeia, as in "the gun went boom"; in Hausa, the verb **yi** 'do, make', as in constructions like **gida ya yi kaca-kaca** 'the house was in complete disorder'. In Kanuri, the verb used in this way is the verb **ngin**, the same class 1 verb used to inflect all class 2 verbs. The speculation therefore that class 2 roots originated through the use of **ngin** to describe ideophonic processes is clearly inevitable. The verb **ngin** was probably used in its independent form to describe actions, sounds, processes, etc., which through usage eventually produced verbal meanings for which there was no class 1 verb. In Kanuri then, the gun does not "go boom" but rather "says boom". Using the ideophone **bádák**, which describes the sound of a beating heart, one can describe the beating of a heart either as an ideophonic process using the forms of the verb **ngin** independently as in the first example below, or using **bádák+** as a class 2 verb root, fused to the finite forms of the verb **ngin** for inflection as in the second example below

Kàrəgènzə́ bádák (bádák) shìn.	'His heart is going badak badak'
Kàrə́gənzə́ (bàdàk) bádákcìn.	'His heart is beating (loudly)'

Therefore given: (1) the independent synchronic meanings of ngin i.e. 'say, think', (2) the synchronic independent use of ngin to describe ideophonic processes, (3) the phonological similarities between ideophones and class 2 verb roots, I propose that the original members of verb class 2 were ideophones, which through constant usage became fused to the verb ngin from their position as preceding juxtaposed objects of ngin.

5.4 *k*-PREFIXED NOMINALS DERIVED FROM CLASS 2 VERB ROOTS

Perhaps the largest group of attested k-prefixed nominals are those derived from class 2 verb roots, as shown here. It will be observed that the nominals vary greatly with regard to their phonological and morphological relation to the proposed underlying source. Semantically as well, there is considerable variation in the relations between source and derived nominal. This might be explained as a reflection of the fact that k-prefixation applied to class 2 roots over a long historical period, at different stages in the growth and development of verb class 2.

class 2 verb root		k-*prefixed nominal*	
bè+	'instruct, guide'	káwé	'advice to girl getting married'
bə́bə́t+	'smell good'	kàwúdì/kàwə́dwə́dì	'perfume'
bə̀lé+	'get s.o. drunk, lead astray'	kàwə́lè	'ecstacy; going astray of religion'
dál+	'dye, soak'	kádâl	'water for soaking millet to whiten'
		kádál	'commit infanticide'
dám+	'flow, trickle'	kádám	'water from spring or well source'
dú+	'drive/chase away'	kádú+	'chase, pursue'
		kàdû	'path'
		kàdúwù	'descendants'
		kadui	'tail'
kâl	'node of stalk/reed'	kàngálè	'corn/millet stalk'
kól+/kólkól+	'tap sharply'	kòngólì	'insolent person; sharp tap on head with knuckles of clenched fist'
kúl+	'get fat'	kùngûl	'gaining weight'
kùrnò+/kùnnò+ III	'be happy'	kàngúrnò	'pleasure, joy'
lálá+	'winnow by pouring'	kàlálà/kăllà	'noise'
làwù+	'comb, preen, rake'	kàláwù	'gleanings'
láwá+	'prick, pluck'		
lèlè+	'be sweet'	kə̀lélè	'happy event'

lə̀m+	'become late at night'	**kə̀lmə́skə̀**	'darkne
lə̀k+	'rot'	**kàlíwù**	'bad od
lə́p+	'thread, string, create'	**kùlûm**	'ring'
lí+	'grow'	**kə̀lî**	'green,
		kə̀líwú	'mold,
		kúlò	'farm,
lílím+	'itch'	**kàlímlìmì**	'an itc
màr+	II+III 2S/P 'please!' (polite insistence)	**kə̀mâr**	'restra
mbá+	'float'	**kàmbâi**	'light
mbə́l+	'struggle, wrestle'	**kàmbə́lì**	'wrestl
mə̀k+	'apply heat (e.g. to body)'	**kə̀mə́gə̀**	'humidi
nàshín+	'dream'	**kə̀náshìn**	'dream'
ndə́p+	'knot, tie'	**kə̀ndéwú**	'joint,
nə̀k+	'fill chadouf basket or leather bucket by shaking at bottom of well'	**kə̀nə́gə̀**	'low sp collec
ngə́k+/ngúk+	'hate/despise'	**kàngúí**	'hatred
njík+	'rip/tear off piece of'	**kə̀njígə̀**	'recent
njès+	'forget'	**kàngésə́**	'forget-
núk+	'utter/make a sound'	**kúnúkkúnúk**	'hidden
núnúk+	'talk secretly'		
njímál+	'sympathize with'	**kànjímàlí**	'sympat
nzə́t+	'wring/squeeze/press out'	**kə́nzə́n**	'fat oi
nzók+	'pick/chip/snap off'	**kùzók**	'small
njúnó+	'pity'	**kànjúnò**	'pity'
ré+	'split, divide, halve'	**kàrérè**	'spine'
rə̀k+	'prepare and tie 2-sided load'	**kə̀rə́gə̀**	'rope f
rə́k+	'flex, tighten (a muscle)'; III 'bear down, grunt'	**kàrə́gè**	'heart'
sàr+	'line up, order'	**kàsâr**	'room-d
sə̀r+	'step aside'	**kúsùr**	'lane o
shìmò+	'guide, direct'	**kàshímò**	'guide,
sótó+	'receive a guest'	**kùsótò**	'guest,
tùs+	'rest, spend/pass time'	**kùntúshì**	'rest'
yé+	'sing'	**kǎiyá**	'song'
yìn+	'breathe'	**kǎinò**	'odor,
yín+	'smell, sniff'		

zá+	'beat, tap, pound'	kàzáà	'spear'
		kə̀zâ	'dance in which dangling metal and leather is worn on waist and legs'
		kázákàzà	'gourd rattle'
zə́k+	'annoy, worry, rush, provoke'	kàzə́gí	'rush, urgent matter'
zò+	'decorate by engraving'	kázó	'burned calabash decoration'
zú+	'push'	kàzû	'load of beast or burden; pack animal, sth to boast of'

5.5 NOMINALS DERIVED FROM CLASS 2 ROOTS THROUGH SYLLABLE EPENTHESIS

These examples demonstrate again how the syllable/word structure constraints which require a word to be bisyllabic, and do not allow word final obstruents, operate in this other form of derived nominal morphology based in class 2 roots. In most of the examples cited a final vowel, in some cases a final CV syllable, is applied to an underlying CVC class 2 root. It is probable that this process is one that is also involved in k-prefixation, as for example mə̀k+ 'apply heat e.g. to body', which becomes the word mə́gə̀ 'warm closed container, underground oven', through final syllable epenthesis, and then through k-prefixation becomes kə̀mə́gə̀ 'humidity'.

class 2 verb root		*derived nominal*	
bák+	'beat, hit'	bágə̀	'stumbling block'
bə̀lèk+	'interrupt, confuse, mix up'	bə̀lə́gə̀/bə́lgə̀	'uncouth fool'
fál+	'break in 2; ford'	fàlí	'section or lobe of sth'
fə́t+	'need'	fə́tkə̀	'needy person'
gál+	'sharpen edge by pounding'	gàlí	'trimmed, sealed edge'
gúr+	'whip, flog, cane'	gúrù	'raised welts, corrugation'
kàlàp+	'anoint hands during wedding'	kàláwà	'anointing of hands during wedding'
kárap+	'scrape, strike together'	kárawù	'knock-kneed'
kók+	'plant, stick in ground'	kógə̀/kówù	'sth holding sth in position'
mát+	'press down and pull strongly'	mángù	'sceptum, nasal bone'
		mânngə̀	'nickname for monkey, referring to noseless flatfaced appearance'
mə̀k+	apply heat e.g. to body	mə́gə̀/mə̀gə̂	'warm closed container, underground oven'
ndə́p+	'tie, knot'	ndéwú	'knot'
nzə́t+	'wring/squeeze out'	nzə́tkə̀	'ignoramus'

sùlìt+	'slip'	**sùlùdí**	'slipping, skidding'
wàwàk+	'become one's fate'	**wàwáà**	'destiny, fate'
yés+	'deviate, turn off'	**yésə̀**	'power to escape thrown objects'
zá+	'stab, poke, beat, tap'	**záwù**	'arrow quiver'
zàk+	'close, cover'	**zágə̀**	'cover, blanket'
zùr+	'scoop up, skid to a halt when stopping'	**zúrí**	'one scooped up handful, one skid'

6. THE FORMATIVE PREFIX *n+*

6.1 ABSTRACT NOMINALS DERIVED THROUGH *n*-PREFIXATION

The synchronically productive prefix **nə̀m+** is a derivational formative of abstract nominals, usually through its application to adjectives, as in **nèmsháwà** 'beauty' from **sháwà** 'pretty, beautiful'. This very productive prefix retains its low tone and does not affect the tone pattern of the word to which it is applied. There also exists a very small group of abstract nominals formed through n-prefixation, a no longer productive process. It appears to be related semantically to the synchronically productive **nə̀m+**, and yet phonologically it carries a high tone which is applied to the first vowel or epenthetic vowel resulting from its application.

When the prefix **n+** was productive, it probably functioned at that time as the abstract nominal formative, counterpart to the k-prefix. Many of the abstract nominals shown here with **n**-prefix, have a counterpart noun or adjective formed through k-prefixation, e.g. the originally Arabic root **lèfà+** 'greet', with k-prefixed **kə̀léfà/kə̀léwà** 'well, healthy', and the abstract nominal **nə́léfà** 'health', the latter nearly synonymous with the synchronically derived **nə̀mkə̀léwà** 'wellness, being in good health'.

k-*prefixed counterpart*		n-*prefixed abstract nominal*	
áshì	'obstinate'	**náshì**	'obstinacy'
kâm	'person'	**nâm**	'being a person; tractableness of woman of good character'
kámú	'woman, wife'	**námú**	'womanhood'
káawù	'stupid'	**náawù**	'stupidity'
kə̀jî	'sweet, delicious'	**nə́jì**	'sweetness, delight'
kə̀léwà/kə̀léfà	'well, healthy'	**nə́léfà**	'health'
kèlî	'wet, green, raw, fresh'	**nə́ngə́lí**	'rainy season'
ngə́lí	'year (by rainy season)'		

kə̀ndə́lì	'jealous'	nə́ndə́lì	'jealousy'
kə́njì	'slave'	nə́njì	'slavery'
kə̀mbə́rshè	'trust'	námə́rshè	'trustworthiness'
kə́mbù	'blind'	nə́mbù	'blindness'
kə́rdì	'non-Muslin, pagan'	nə́rdì	'being a non-Muslin'
kə̀skê	'unimportant, easy'	nə́skè	'relief, improved health'
kə̀rê	'generous'	nə́rè	'generosity'
kówúná/kógə́ná	'courtier, servant'	nówúná/nógə́ná	'servile behavior'
kăigə̀/kâiwù	'fearful, cowardly'	náigə̀/náiwù	'fear, cowardice'
kwângâ	'man'	nángà	'manhood'

6.2 OTHER EXAMPLES OF THE *n+* AS A FORMATIVE PREFIX

A number of examples presented here are admittedly speculative and are presented to document the process of n-prefixation. The evidence presented would suggest that the n-prefix has played an important role historically in the formation of Kanuri words.

proposed source		n-*prefixed form*	
+găi	'like, as'	ngái	'thus'
gál+	'sharpen edge by pounding	ngálngàl	'collar bone'
gə̀p+	'throw out'	ngə́bdó/ngə̀bdòlá	'garbage heap'
gə̀wát+	'step on'		
gə́wàdə̀	'step, foot (lenght)'	ngə́wádò	'scar'
gewado	'bunion, callous'		
gùl+	'say'	ngûl	'payment to a malam'
gùlû	'exaggeration'	ngúlú	'professional talker who heaps flattering praise'
kájí	'he has opened it'	ngájì	'course flour of grains cracked open on stone'
kààjì	'incense'	ngàjíyà	'insence burner'
		ngáyà	'earthen baking container'
kə́mə́s+	'squeeze, knead, wring'	ngímə́s+	'wink'
kə́rì	'dog'	ngégí	'gazelle'
kúl+	'get fat'	ngúl	'hide, conceal'
kûr	'wooden mortar'	ngûr	'testicles, scrotum'
kólò	'small round clay pot'	ngóló	'sexual organs'
kə́r+	'wrap up'	ngə́rgə̀	'leather bag'
kə́rgə̀	'leather grain sack'		

rə́k+	'flex (muscle)'; III 'grunt, bear down'	**ngə̀rə́gè**	'excrement of camel, sheep, goat'; LUK: **ngárgə̀** 'dung of camel, goat, sheep'
tə́làm	'tongue'	**ndə́làm**	'desire, craving'
kàjîm	'grass'	**njîm**	'grass hut'
kúm+	'shave'	**ngûm**	'forehead'
yi TUB	'water'	**njî**	'water'
sámùn	'alike, similar'	**nzámùn**	'alike, similar'
wúl+	'scrape, pick off'	**ngə́wə́l**	'egg'
kúwúl+	'shell, peel skin'		

7. THE FORMATIVE PREFIX *s+*

Another prefix, s-, apparently represents another of the no longer productive formative affixes of Kanuri. In all of the examples presented below, s-prefixation is applied to class 1 verb roots, except for the few cases where a class 2 root is involved, as indicated by "2". Earlier, in discussing nominals derived from class 1 verb roots through k-prefixation (see 5.1 above), it was noted that a formative affix (+s/zə+) often accompanied the k-prefix in the formation of certain of the deverbal (b) nominals presented there. It is probable that the same formative affix occurs as a prefix in the examples presented here, though its source is presently unknown.

source		s-*prefixed nominal, etc.*	
bù+	'eat, win'	**zə́wú**	'mastery of entire Holy Koran'
búr+	'move, migrate'	**zùwùrò**	'migration'
gàná	'small, little'	**sə́nàná**	'small, little (pl)'
gánt+	'possess, acquire'	**səganti**	'possession'
gə̀dí	'source, east'	**sə́gdí**	'zanna-mat fence'
gə̀p+ 2	'throw'	**sə́gə́p+** 2	'adjust or shift a load up on one's back'
lìw+	'protect'	**səlifo**	'protection'
mánà	'talk, speech'	**sə̀mánà**	'chatting, conversation'
mbàr+/yìmbàr+	'get tired'	**sə̀mbà+** 2	'become weak'
mèr+	'recover, get well'	**sə̀mérò**	'recovery'
gə́ré+ 2	'compare, put side by side'	**sə̀gə̀rì+** 2	'move to back or edge'
nàt+	'sow, plant'	**sə́nátó**	'first millet shoots'
nyè+	'herd, pasture (animals)'	**sə́nyé/sə́nyí**	'herder's professsion'
rə̀mb+	'pay back, reimburse'	**sə́rə̀m**	'reimbursement'

rə̀nd+	'hurt, ache'	**sə́rə̀n**	'pain'
yàrgàl+	'breed, raise'	**sargalo/sargali**	
yìrgá+	'increase'	**sə́rgà/sə́rgài**	'increment, increase'
wùr+ 2	'break/knock down'	**súwúr+** 2	'partially break down'

8. CONCLUSIONS

According to the present analysis, the structure of the Kanuri lexicon is different from what previous treatments of the language have revealed. It has been suggested that a significantly high proportion of the words of Kanuri that are available to us synchronically are in fact historically derived forms. It has as well been suggested that ideophones and other onomaopoetic words have played a crucial role in the development of the language. Such motivated forms have become class 2 verb roots through fusion with the finite forms of the class 1 verb **ngin**, only after undergoing an earlier stage during which they functioned essentially as the objects of that verb, for the purpose of describing ideophonic processes. These same monomorphemic stems have also come to be a crucial component of the derived nominal morphology of Kanuri, functioning as the core (Lukas' roots) of nominals formed through the application of the no longer productive formative affixes, and also in nominals derived through phonological processes (i.e. tone change, syllable epenthesis, reduplication, compounding, etc.) and through the application of the synchronically productive derivational affixes. Thus I am suggesting that the Kanuri lexicon is made up of the following four major components, each composed of the word types indicated. Borrowed elements are excluded.

components	*word types*
fixed basic items:	class 1 verb roots, basic lexical items (nouns and adjectives of the basic CV/C/V structure.).
fluctuating basic items:	ideophones, class 2 verb roots.
fixed derived items:	s-prefixed nominals from class 1 roots, k-prefixed and n-prefixed nominals from ideophones/class 2 verb roots/basic lexical items, k-prefixed deverbal nominals from class 1 roots.
fluctuating (productive) derived items:	nonfinite and finite verb forms from class 1 and class 2 roots, derived nominals from synchronically productive affixes, derived nominals through phonological processes.

It is hoped that these rather tentative suggestions may provide guidelines for the reanalysis of the structure of the lexicon in Kanuri and other Saharan languages, and that the processes of word formation that have been described may contribute to the eventual documentation of similar processes in other languages.

NOTE

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Wilhelm Seidensticker

Borno and the East: Notes and Hypotheses on the Technology of Burnt Bricks

1. INTRODUCTION

This paper does not attempt to suggest solutions but to raise questions - questions the answers to which seem to lie very much in the Nilo-Saharan complex. This is indicated by archaeological evidence as well as by oral traditions. Furthermore, dynamics and contents of culture development and change in the Nile Valley does support hypotheses with regard to spreading into the Chad Basin.

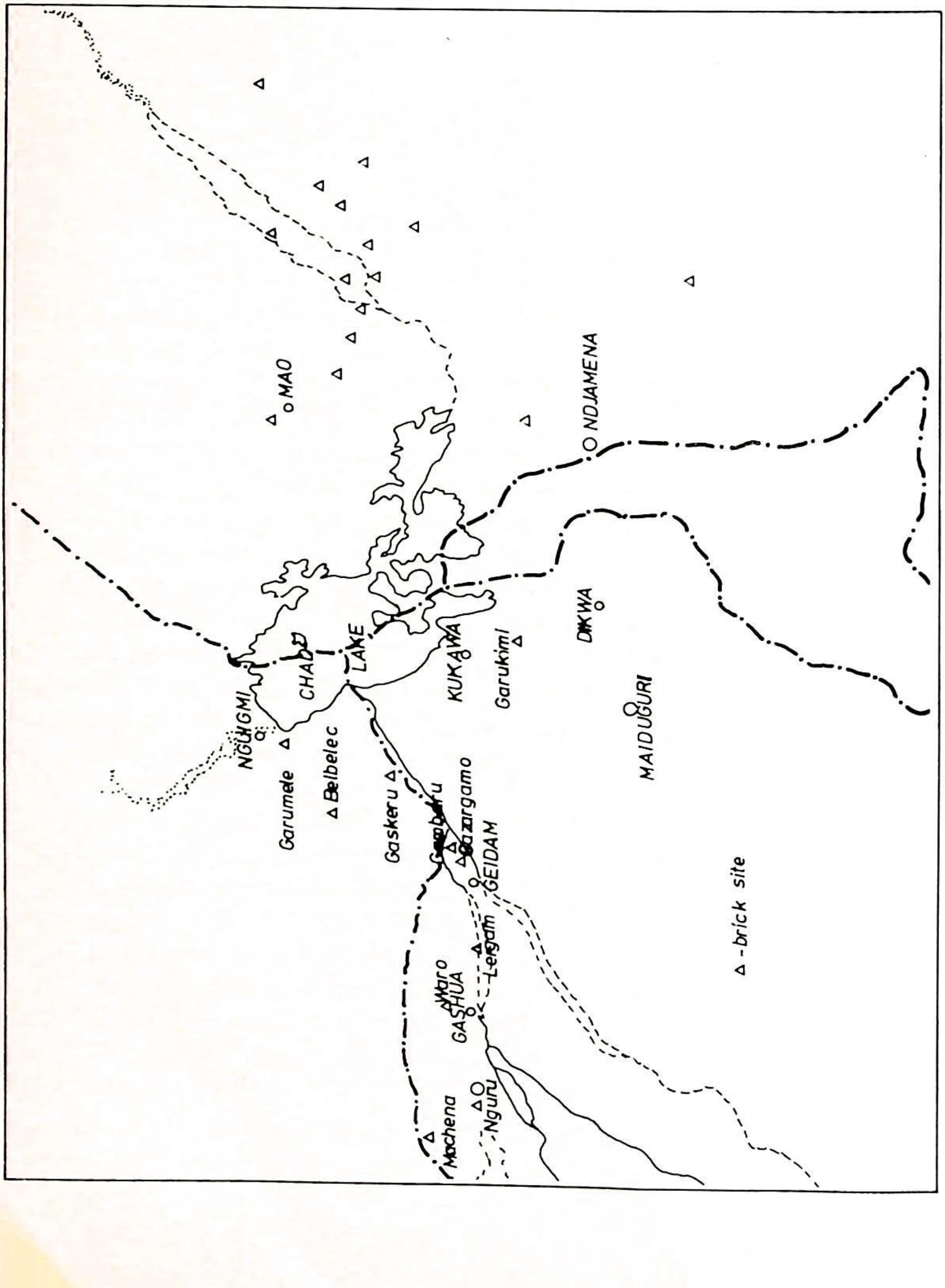
This paper does not attempt any anachronistic revival of the speculative culture history of the nineteenth century - on the contrary it acknowledges the necessity and legitimacy of national oriented political history as well as in-depth linguistic and philological research into individual languages. This paper rather advocates international - not in the limited political sense - and interdisciplinary research in culture history.

Since Imam Ahmed ibn Fartua almost four hundred years ago wrote a biographical account of the first twelve years of one of Borno's most important rulers, the history and culture of Borno has generated a great deal of interest among scholars.[1] Despite all efforts - or should I say because of them - it is early Borno history especially which up to now leaves so many questions unanswered. Historians state with confidence that the Magumi - the ethnic group the founder of the Sefawa dynasty was associated with - were nomads, speaking a Nilo-Saharan language (Smith 1971:170). How could a people of nomadic origin develop a political culture of this specific kind: with divine kingship on the one hand, and a most rational political and military organization of the society as well as administration of the territory on the other hand; a civilization with towns and palaces and burnt bricks, of which there is no evidence West of Borno.

2. BURNT BRICKS IN KANEM-BORNO
WITH SOME CLOSER OBSERVATIONS ON THE KOMADUGU YOBE VALLEY SITES

Cohen and Brenner (1974:93) state that the Kanuri have one of the oldest political histories of Africa. For this reason, it is by far beyond the scope

Map showing distribution of *Burnt Brick Sites in Kanem/Borno*
(Sources: Lavers 1971; Lebeuf 1972; Seidensticker 1978)



of this paper to enter into a discussion of Borno history - although our main concern ("burnt bricks") could lend itself to this extension. A recent publication lists seventeen brick sites in *Kanem* and south of it in Chad Republic including *Njimi* the oldest known capital of the Sefawa dynasty. The majority of these sites are located in the northwest of the *Bahr-el-Ghazal* valley. They were dated between the twelfth and the fourteenth century (Lebeuf 1972). Lavers (1971) maps three sites in Niger Republic northwest of Lake Chad and south of Nguigmi *Garoumele* (a place also known as *Wudi* in history) and two other sites, one north of Maina Soroa, *Gaskeru*, and another one of unknown location *Belbelec* or *Kalumfardo* of *Kalumbardo*. The latter site is believed to be of the seventeenth century and also to have been destroyed in the same century. *Gaskeru* seems to be of the early eighteenth century. Published sources and investigations suggest that the *Garoumele* site antedates *Gazargamo*. So much for the evidence of burnt brick technology and surviving structures outside the boundaries of Nigeria.

Within Nigeria seven sites are known: with the exception of *Machina* and *Garukime* all of them are located in the *Komadugu Yobe* valley.[2] The most important site is the capital of Borno, *Birnin Gazargamo*, founded about 1470 by the Sefawa ruler *Ali Gaji b Dunnama b Biri*.

> The capital is surrounded by a wall of fourteen feet in height, the foundations of which are from eight to ten feet deep, and which seems to have been built with considerable strength. To this defence is given the additional security of a ditch, which encompasses the whole; and care is taken, that at sun-set the seven gates which form the communication with the country shall be shut. (*Proceedings* 1:146.)

This is an account of the eighteenth century and gives an impression of the size of this town which was for more than 300 years the centre of Borno. The names of the gates are known, the market was possibly outside, the main buildings (palace, mosque) in the centre of the circular plain, other brick buildings - only tentatively identified - are scattered within the enclosure. The palace must have been an impressive building even after the town was destroyed at the beginning of the nineteenth century.

> The remains of the walls were in many places still standing in large masses of hard red brickwork, and were from three to four feet in thickness, and sixteen to eighteen in height. (*Missions* 3:364.)

> The abode of the Sultan covers a great extent of ground and is entirely built of brick, this is much superior to the brick of our country, its fine texture and external surface have a fine gloss. (*Missions* 3:565.)

These two descriptions originate from the early twenties of the nineteenth century; today not very much is to be seen. A test excavation made by Connah uncovered brick walls standing up to "nearly 2 metres in height" (Connah 1976:350). The brick wall was found to stand "on wider footings of unfired mud bricks beneath which is natural sand" (Connah 1976:336, plate 6). With regard to architecture Connah (1966, quoted from Lavers 1971) and earlier Migeod observe that only a few of these structures could have supported roofs and will have to be considered compound walls within which more temporary structures were put up. The same observation was made with reference to *Gambaru*, a palace of the late sixteenth and seventeenth century, a few miles northeast of *Gazargamo*.

Gambaru was as famous though not as large as *Gazargamo*. Tradition suggests that *Gambaru* might have been abandoned (Lavers 1971) which could explain the good state of preservation. These two are best-known of the Borno brick sites. *Nguru*, close to the present-day Nguru, is a town site where the *galadima*, the governor of Western Borno, resided. A circular enclosure with some remains of the brick palace is not older than mid seventeenth century - destroyed during the *jihad*.

Between Gashua and Allanjuori we find another palace site by the name of *Waro*, late seventeenth century, also destroyed during the *jihad* (Lavers 1971). To my knowledge this site has not yet been visited by any historian or archaeologist. Lavers drew my attention to another site which I would classify as a palace site as well, i.e. *Lergam* (Seidensticker 1978:1f.). This site is located 31 kilometers west of Geidam on the northern bank of Komadugu Yobe. The most visible feature of this site is a midden mound, approximately 5 meters above the surrounding ground level and 30-40 meters in lenght and width. Immediately to the west of this midden the palace was located. Although location of palace walls and entrance (west) are known, there was no visible evidence of brick walls with the exception of a few bricks obviously part of a wall within the assumed palace enclosure. Further to the west (approx. 150-200 meters) the present village of Lergam is situated. The farmed area south and west of the midden, including the palace site, is scattered with potsherds. Small and broken pieces of burnt bricks were found in the midden mound. The name of the founder of the palace was given as *Mohammed Ajimi*, who can be considered identical with *Muhammed b. al-Haji Hamdun* (ca. 1731-47). The present village of Lergam seems to have been located east of the midden mound, where *kuka* and other vegetation may well indicate previous habitation. According to information gathered on the site, the settlement was relocated 150 years ago.

The last of the historical sites, and to my opinion also the latest, is *Garu Kime* (Seidensticker 1978:1f.). This site is located about two kilometers west of Monguno, approx. 50 meters south of the Maiduguri-Monguno road, opposite the village of Garukime. A rectangular enclosure - lenght of sides being approximately fifty to sixty meters with an elevation in the middle which obviously was the entrance (west) - was referred to as the palace. About 30 meters to the west there is a circular elevation of about one to two meters above the surrounding level (mosque?). All elevated parts of the site were covered with broken pieces of burnt bricks.

According to Nachtigal the *mai* resided in *Berberuwa* (close to Ngornu). The plan to build a residence in Wudi was rejected by Shehu Laminu. A residence was also eventually built close to Ngornu: Birni-el Dschedid. *Garu Kime* seems to be the most southern burnt brick site.

There is another place which should be mentioned: *Machina*. The palace of the *Machinama*, the District Head of Borno's most western district, is built of burnt bricks. Machina was a vassal kingdom of Borno in the seventeenth century, and it is assumed that the palace dates from this time. The palace consists of several impressive brick buildings - all still in use - surrounded by a brick wall. A careful preservation and study of this building could add new insight into our understanding of Borno architecture.

The absence of brick industry in the nineteenth century can be attributed to the major historical events beginning with the conquest and destruction of *Gazargamo*, Borno's capital (1808), change in power (1814-46), foundation and destruction of the new capital *Kukawa* (1814/1893), the arrival of the British (1902), and the consequent introduction of an administrative superstructure. Discontinuity seems mainly due to political circumstances less than to the fact that a specific technology and its use was permanently abandoned for an alternative. Architects and builders of Kukawa and Dikwa, the town Rabeh had chosen for his headquarters, did not apply burnt bricks. In one of the earliest studies on Borno in this century it was stated even that "the secret of their manufacture has, however, been lost".[3]

3. ORAL TRADITIONS: CONTENTS AND MEANING

Oral traditions with regard to burnt bricks present themselves like an archaeological site covered with a scatter of potsherds and other pieces of artefacts - complex and at the first glance meaningless. Oral tradition is viewed as a kind of "historiography", differing from written history less by factual truth than through the fact that it is permanently changed. Social and cultural change (migrations, religions, wars, ecological crises, etc.) formed oral traditions over the centuries. Sometimes written history is nothing else but oral traditions which at a certain time became codified; oral traditions remain the complex whole of facts and interpretations, judgements, expectations, and last but not least omissions.

Oral traditions have been collected over the years in Machina, Geidam, and Maiduguri. Traditions from *Machina* and *Geidam* (with reference to *Lergam*) suggest that bricks were transported to both places from *Gazargamo*. Lavers states documentary evidence that *Gaskeru* and *Belbelec* have been supplied with fired bricks by the *mai* (Lavers 1971). The cases mentioned indicate that the use of fired bricks was a royal privilege granted to a vassal ruler or that it was the *mai* (as in the case of *Lergam*) who took temporary residence which might have required a suitable construction. According to traditions collected in Geidam, bricks were carried along by the followers of a *mai* whenever he had to leave the town.

If we assume that oral and documentary evidence is correct, then we could conclude that burnt bricks must have had a symbolic value in connection with kingship far transcending the rational use of a building material. Oral tradition collected in Maiduguri insists on punishment in case burnt bricks were used in other than royal residences. It is common belief that fired bricks in Borno are strong and often contain magic substances originating from sacrifice. Bricks at the palace of Machina are described as 'lung', 'liver', etc. according to their slighty different colours. Various traditions collected in Maiduguri indicate that the preparation if the clay mixture was done where animals were slaughtered and that the blood of the animals was used (this reminds us of traditions told about *Gambaru*).

Traditions about the origin and technology of brick-making are more difficult to assess. One learned *malam* insisted without any doubt that *tubali* as well as *jalab* are of Arabic origin. His explanations indicate a connection with Pharaonic Egypt. He offered puzzling details of technology, which I shall report without comment: Bricks were fired in a *njim jalab warteram* which translates into English as kiln, and which was built of *tubali*. The firing was done by covering one layer of bricks with wood and then another layer of bricks etc.

With a few exceptions all traditions on burnt bricks are related to kingship. The few exceptions attribute brick technology to the *So* as do some traditions with regard to design of towns and walls. Most traditions claim Eastern origin of the technology, which in itself remains very much in the dark. Tradition insists on addition of blood to the clay. Referring to *Wara* Lebeuf (1961) states that the clay was mixed with warm water in which fat beef and camel meat were cooked. Magical purpose or not, it is interesting that only burnt bricks are associated with these traditions and none of the various other building techniques which have long been employed concurrently.[4]

It remains a question whether manufacture of burnt bricks was a secret practice - as Benton suggests - or whether it is only that the discontinuity in the nineteenth century led to this impression. Unfortunately, traditions remain elusive with regard to building technology, labour organization, and logistics. Many reasons could account for that, e.g. the technique might have gone out of use before 1808, slave labour and migrant expert craftsmen could have been involved. The high prestige of a brick building and the representative function of same do not necessarily mean that the brick worker had a high social status - the contrary is equally possible. This would exclude the leader, who in *Gazargamo* is said to have the title *mai jalabwube* (Seidensticker, fieldnotes) which translates into English as king/leader of brick makers.

4. EXCURSUS: ANCIENT BRICKMAKING

> And they said to one another, Go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar.
>
> *Genesis* 11:3

Apparently the first bricks were made about 4000 B.C. in Mesopotamia (Pope 1965:15) - moulded and sun-dried. In *Ur* a true arch was discovered built of sun-dried bricks, using a bitumen slime as binding substance. The excavation of *Choga Zambil*, an *Elanite Ziggurat* (temple/tomb) at *Ur* revealed the use of fired bricks in 1250 B.C. A storage chamber of this building was found to have had "walls of crude brick on a bed of fired brick". This building had the most impressive dimensions of 165 feet high and 345 feet square at the base within a sacred enclosure of some 1,300 feet square (Pope 1965:18).

It is widely assumed that brick technology (production and use) spread from this centre of early civilization to East and West. There is no evidence of bricks pre-dating the Mesopotamian use. The Great Wall in China was built about 210 B.C., in which burnt and sun-dried bricks were used. From Egypt the knowledge of making bricks found its way to the south[5] and to Greece and Rome. There brick industry became "virtual an imperial monopoly" (Oxford Classical Dictionary 1973) in the third century A.D. Fairly abundant evidence proves technology transfer from Rome to northern Europe. The Roman terms *tegula, imbrex, later* etc. for bricks were borrowed from northern Europe (sometimes descriptive terms like 'baked clay' or 'baked stone' have remained in use (Buck 1949).

5. EXCURSUS: BRICK INDUSTRY IN THE TWENTIETH CENTURY

The idea of building a new capital had occurred to Shehu Umar and his council thirty years before the British came to Borno. A place northeast of Kukawa had been selected and named *Cherua*[6], meaning 'the rich one' and the 'happy one'. Thus, when Shehu Bukar Garbai moved his administration from *Kukawa* to *Kalwa* in 1907, a number of small hamlets between the important market village of *Maiduguri* and the British fort in *Mafoni*, it seemed to have been some kind of mutual agreement between him and the colonial administration (Kirk-Greene 1958:7f.). Although Maiduguri is a town of the twentieth century, it differs considerably from colonial townships through the fact that its establishment was based on the concept of Borno towns: the dominant morphological feature of the east-west axis, *dandal*, with palace and mosque at the east end; residential patterns; market and market days; tradition of place names from Gazargamo and Kukawa revived (Gambaru, Gawange).[7]

This new town became known in Borno as *Yerwa*, a name which exactly 37 years earlier was given to the intended capital. Identity and traditionalism as manifest in the foundation of *Yerwa* indicate that brick technology can be understood as a "culture element", the revival of which became as necessary as the revival of other institutions and concepts. Brick industry must have started again soon after 1907. To the end of the twenties the Native Authority brickyard was close to where the post office is located today, later moved along the *Ngadda Bul*, behind the Women's Teachers College, where the brickyard is still today - now part of the Metropolitan Workshop.

The buildings built of fired bricks include palace and mosque and also offices as a concession to modern times, quarters and workshops of the Native Administration, and those of the colonial administration. This pattern reminds us of the pre-nineteenth century restricted use of bricks, which has been considerably extended and modified in the present century. Wealthy Tripolitan traders in *Fezzan* Ward and others can also build houses of bricks for commercial and residential purposes. Brick production was also considerably extended. Besides the brickyard there are some ten (1978) private contractors firing bricks in close vicinity to the Metropolitan Brickyard along the *Ngadda Bul* (21 contractors according to O'Brien).

Maiduguri bricks are essentially "sand blocks bonded with fired clay" (O'Brien 1969) with a lower compressive strength than bricks in Britain. Stronger than sand-crete blocks (8:1 sand:cement ratio) with high density and low permeability, they are an "excellent building material in areas where a cool building is required" (O'Brien 1969). The day mixture is rolled in the sand before it is slapped in the double mould (Kanuri: *mol* or *jalab kamtaram*). The mould is removed and the brick is left to dry for about five days. For firing the Metropolitan Brickyard uses three kilns (Kanuri: *kilen*) and the contractors use clamps (which are referred to as kilns as well). Firing takes up to six days in the kiln. The whole cycle is approximately twenty days with packing and unpacking the kiln.

O'Brien mentions for 1969 a production of 12 million bricks per year by the contractors (which would be enough to build 500 middle-class British houses). The production of the Local Administration brickyards at the same time was considerably less but of superior quality.

A few observations can be made on the people working in this profession. While the manager of the brickyard is of *Shuwa* origin and has followed his father in this position, all the other workers claim descent from a settlement of freed slaves which was located close to the brickyard till 1942. The descendants of these freed slaves today live in a ward called *Gambaru/Liberty*, where all workers have their residence. The contractors and their workers (referred to by one brickyard informant as Kanuri *talaga* which translates into English as 'commoner') are of mixed ethnic origin. Some of the contractors are *Kanuri*, others are *Mandara*, or from other ethnic groups. The workers they employ for dry-season work of brick making (they do not have kilns and drying sheds) are according to my not yet concluded observations young people from Cameroon Republic (*Banana*, *Wula* and other ethnic groups). The extent to which foreign labour and people of non-Kanuri origin are employed in brick industry is somewhat remarkable.

6. CONCLUSIONS

Brick manufacture coincides with the period of *Sefawa* supremacy in Kanem and Borno (twelfth to nineteenth centuries), and also largely with this dynasty's territory. The absence of brick manufacture in the nineteenth century supports the above statement and seems to indicate a special value attached to burnt bricks within the political culture of pre-nineteenth century Borno. It may be concluded here that the command of this technology and the use of the product was a "monopoly" of the ruling *Sefawa*. It is widely accepted that the development of urban centres was instrumental to stabilization and maintenance of *Sefawa* rule.

Urban centres mean command of labour force and technology as well as architecture, which with regard to the ruling group is an expression of their claim to rule, and on the other hand becomes an integral part of it. I think that the early history of states in the Central Sudan cannot be separated from the development of towns: a theme within which the manufacture of burnt bricks, if investigated on a larger scale, might have special insights to offer into the culture history of the area.

NOTES

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1. Binet 1952; Bivar and Shinnie 1962; Connah 1966; Lavers 1971; Seidensticker 1980.

2. Connah (1966) has surveyed some ten middens in the lower part of the valley and on the basis of radiocarbon dates suggests settlement activities between the ninth and thirteenth centuries A.D.

3. Schultze 1968:176. Above remark on bricks was added by P.A. Benton.

4. Besides burnt bricks *(jalab kime)*, also sun-dried bricks *(jalab kili)*, *tubali*, mud *(katti)*, and grass have been used for the construction of houses. This refers to towns and - as mentioned above - most likely also to palaces.

5. Coptic descendants of ancient Egyptians on the upper Nile "called their technique of making mud brick *tōbe*" (Encyclopaedia Britannica 1975).

6. Nachtigal 1879-89,3:16f.; the name also reminds of *Al Qahira* (Cairo) 'the victorious one'.

7. Seidensticker, "Internal Report on Research in Borno", 1978.

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Part three

Comparison and Classification

M. Lionel Bender

Some Nilo-Saharan Isoglosses

1. INTRODUCTION

The structure of the Nilo-Sahelian (Bender 1977 after a suggestion by Serge Tornay) or Nilo-Saharan (Greenberg 1963 and earlier) phylum is still quite controversial. The very existence of such a phylum is still in doubt in more conservative circles (for example, M.A. Bryan has referred to such proposed phyla as "macro-monstrosities"). In this paper I address both issues.

Accepting Greenberg's (1963) outline with my own modifications, and appending parts of five other language phyla plus four scattered world control languages, I arrive at this list: A. Songay, B. Saharan (4), C. Maba (2), D. Fur, E1. Nubian (4), E2. Surma (7), E3. Nera, E4. Eastern Jebel (3), E5. Nyima (2), E6. Temein (2), E7. Tama (2), E8. Daju (3), E9a. North Nilotic (6), E9b. Central Nilotic (4), E9c. South Nilotic (3), E10. Kuliak (2), F1. "Bongo-Bagirmi" (7), F2. Kresh (no data available), F3. "Moru-Madi" (2), F4. Mangbetu, F5. "Mamvu-Balese" (no data available), F6. Baledha, G. Berta, H. Kunama (2), I. "Komuz" (6), K. Proto-Indoeuropean, L. Afroasiatic (6), M. Kordofanian (5), N. Niger-Kongo (5), O. Hadza, P. world controls (Basque, Burushaski, Guarani, Wailbri or Walbiri).

A. through I. of the above are the families making up Nilo-Sahelian.[1] There is no J. (J. was Gumuz or Bega, now combined with Koman as "Kumuz"). L, M, N and O represent all other African language phyla, M and N together being Niger-Kordofanian. The numbers in parentheses show how many languages were sampled in the respective groups; if no number appears, only one sample language was used. In the Nilo-Sahelian cases, a maximal number of mutually unintelligible varieties was generally used (based on the literature and my own estimates of lexical overlap). In the other cases representatives of major branches were chosen.

A form is said to *dominate* a group if it occurs in a majority of the sample languages of that group (one of one, two of two, two or three of three, three or four of four, three or more of five, four or more of six or seven, etc.). Nilotic consists of sub-sub-families E9a., E9b. and E9c.. East Sudanic consists of families E1. through E10., Central Sudanic is F1., F3., F4., F6., and Niger-Kordofanian is M. and N. together. A form dominates Nilotic if it dominates two or three of its sub-sub-families; a form dominates Niger-Kordofanian if it dominates both M. and N.; Central Sudanic if it dominates three or four sub-families; East Sudanic if it dominates six or more sub-families; Nilo-Sahelian if it dominates five or more families. Control languages are included for use in a planned quantitative mass comparison to be carried out later.

2. SOME PROPOSED CENTRAL SUDANIC ISOGLOSSES

Central Sudanic and East Sudanic are the only families of the Nilo-Sahelian phylum which are large and complex and for which serious internal structures have been proposed. I reject for the time being Greenberg's "Chari-Nile", consisting of families E., F., G., H., for reasons given in Goodman 1970 and Bender 1976.[2] Nilotic, a sub-family of East-Sudanic, is itself larger than most Nilo-Sahelian families, but its identity as a unit is hardly questioned today after Greenberg's convincing demonstration (1963 and elsewhere). At the conference in which this paper was read, it seemed generally agreed that Nilotic is a tightly knit family on the order of Romance or Germanic families within Indoeuropean.

Central Sudanic presents a similar picture, but since it has had much less exposure, I propose to present the five best putative isoglosses appearing in my current mass comparison work (Table 1).

Table 1: Proposed Central Sudanic Isoglosses[3]

			Dominates:			
No.	*Gloss*	*Approx. Forms*	*N-S Families*	*E.S. Sub-Families*	*C.S. Sub-Families*	*Other*
6	'bird'	*SVLi, *(a)RE	related root in A	related roots in E1, E3, E9c	all	found in N Zande
11	'breast'	*(m)ba	F	none	all	found in L Ari?
22	'ear'	*mbi(li)	F	none	all	found in B Zagawa
55	'name' (n.)	*ErU	related roots widespread	E1: related roots widespread	all	found in M?
71	'sit'	*-Ji, *-si	F	none	all	found in E9a Ragreg, L Tanglé
73	'sleep' (vb.)	*(TO)ɗO	F	related root in E9b	all	found in L, M, N, P

Although the data includes no forms from F2 (Kresh) or F5 ("Mamvu-Balese"), in each case listed in the table, dominance is assured in a majority of the six branches of Central Sudanic. (I have combined branches 1 and 3 of Greenberg's listing of seven branches, 1963:109; branch 3: Binga, Yulu, Kara shows high similarity to branch 1: Bongo, etc.) It would be interesting to see if the suggested isoglosses would extend to F2 and F5 also. Of the six given, one, 'name' is not satisfactory, because related roots of form *(ka-)RVN are found widely in East Sudanic and dominating Kordofanian (M).

3. Some Proposed East Sudanic Isoglosses

East Sudanic is much larger and much more diverse than Central Sudanic. Supporting isoglosses are not so clearcut. Nevertheless a number of fairly convincing ones do exist (see Table 2).

Table 2: Proposed East Sudanic Isoglosses

				Dominates:		
No.	*Gloss*	*Approx. Forms*	*N-S Families*	*E.S. Sub-Families*	*C.S. Sub-Families*	*Other*
8, 58	'black, night'	*TVL, *(K)uR, others	B, D, E, F	E1,E2,E3,E4, E6,E8,E9	F1,F4,F6	Dominates M; found in C, I, L
12, 28	'burn, fire'	*ku-zu-go *maa(s)	D, E, G, I	E2,E3,E4,E5, E6,E8,E9	F1	Dominates K, L,N,P; found in B,E1,M
14, 63, 92		See Table 3				
15, 94	'cold, wet'	*KVR, *TVR	A, C, D, E, H	E1,E2,E3,E4, E5,E9	F1, F6	Dominates K, N; found in B, E5,E7,E8,F3, I,L,M,P
18, 43	'die, kill'	*BVR, *FU, *kU	C,E,F,H	all but E6, E10	F1,F2,F6	Dominates M; found in B, I, L, P
29	'fish' (n.)	*ku-lug-ut, *kVL(t)	E, G	E2,E4,E6, E8,E10	F1, F4	found in C, E1,E9a,E9b, L, M, N
37	'hand'	*(K)VR, *(a)Si(t)	C, E, F	E1,E2,E3,E4, E5,E8	F1, F3, F4	found in B, E9a,I,L,N
38	'head'	*ɔl(V)	E, G, related roots elsewhere	E1,E2,E4,E5, E6	related roots	found in N,P
44	'knee'	See Table 3				
54	'mouth'	*kutuk	D, E, G, H	E2,E4,E6,E8, E9,E10	F6	found in B, F1,F3,M,P
61, 90		See Table 3				

				Dominates:		
No.	*Gloss*	*Approx. Forms*	*N-S Families*	*E.S. Sub-Families*	*C.S. Sub-Families*	*Other*
63, 92	'rain, water'	•**BV(g)**, •**MAN**	E, G, E	E2, E3, E5 E6, E8, E9	F1, F3	Dominates L, found in B, E, E9b, N, P
86	'three'	•(ko)**TVS** -(**Vg**)	A, D, E, I	E1, E2, E4, E5, E7, E8, E10	none	found in B, M, P
88	'tooth'	•**nEL(d)**, •**kEL(d)**, •(n)**igi**(t), **le**(k)	E	all but E6, E7	F6	Dominates O, found in E6, E7, L, M, N, P
96	'white'	See Table 3				

The best of the isoglosses proposed in Table 2, in terms of dominating East Sudanic and not dominating Central Sudanic, Nilo-Sahelian, or other groups, are: 'fish', 'head', 'mouth', 'three', 'tooth' (Two of these dominate only five subfamilies, but are striking nevertheless). The item 'rain, water' may also be a good one: does the domination of Afroasiatic (L) by this form result from loans into several Afroasiatic languages or coincidence (Egyptian **mw**, Tamazigt **ama-n**, Arabic **mooya**, Tanglé **am**)?. In Table 2 proposed base forms of shape **KVR**, **BVR**, and **kV-CV(C)-K**, **T** are noteworthy and will be discussed in 5 and 6 below.

4. SOME PROPOSED NILO-SAHELIAN ISOGLOSSES

Surprisingly, perhaps, it is about as easy to find plausible Nilo-Sahelian as East Sudanic isoglosses (Table 3)

Three of the proposed isoglosses of Table 3 also dominate Kordofanian ('knee', 'other, two', 'white') and one ('white') dominates Niger-Kordofanian. Domination of K or O is of less interest, since each consists of a single sample language. Domination of P (the four world control languages) by 'cloud, rain, water' seems to be pure chance, having three glosses and four languages to draw on. Nevertheless, the question of significance is a statistical one, and a measure of significance will have to be applied when the quantitative mass comparison is carried out. This is why, after all, control languages are included. Of the six proposed isoglosses, 'white' seems weakest; the others are about equally strong, given the balance of domination in Nilo-Sahelian and other groups.

Table 3: Proposed Nilo-Sahelian Isoglosses

				Dominates:		
No.	*Gloss*	*Approx. Forms*	*N-S Families*	*E.S. Sub-Families*	*C.S. Sub-Families*	*Other*
7, 20, 23	'bite, drink, eat'	•(k)am, •ɲam, •δam	A, C, D, E, F, G	E2, E4, E5, E6, E9	F3, F4, F6	Dominates O, found in L, N
14, 63, 92	'cloud, rain, water'	•(k)VR, •bVL	A, D, E, G, H, I	all but E2	F1, F3	Dominates K, O, P, found in L, N
44	'knee'	•kuT(uŋ), •kuN, •TuN	All but H (data missing)	All but E7 (data missing), E8	F1, F3, F4	Dominates K, M, found in L, N, P
61, 90	'other, two'	•BVR, •(k)Vr(k), •raM	A, C, D, E, F, H	all but E8	F3, F4, F6	Dominates M, found in L, N, P
89	'tree'	•(k)Vl, •(k)Et	B, D, E, G, H	E1, E2, E4, E7, E8	none	found in F3, L, M
96	'white'	•BVR	A, D, E, G, H	all but E7 (data missing)	none	Dominates K, M, N

5. NILO-SAHELIAN AFFIXES

5.1 GENERAL

At the beginning of this mass-comparison work on Nilo-Sahelian, I attempted to peel of and discard all prefixes and suffixes marking singular, plural, gender, etc., including many of unknown function. Then I realized that the affixes were at least as interesting and significant as the roots! Consider a few fragments of proposed cognate sets:

'bird'			*'bone*			*'dog'*		
B	Berti	tarrbo	E9a	Acoli	cògo	C	Maba	nok
E1	Birgid	kwarti	F1	Sara	sīngā	E9a	Burun	gɔk
E3	Nera	kərba		Baka	congo		Naath	jiok
E9c	Nandi	tarit		Kara	ɲoŋgo	E10	Ik	nok^{a}
F3	Moru	àrɪ	H	Kunama	sanga	N	Zande	ango
F4	Mangbetu	naári	I	Sai	žɔkwa			

'dog'[4]

D	Fur	asa
E3	Nera	wəs
E7	Tama	wi
	Merarit	wīš
E8	Shatt	iis
E9c	Nandi	sese
Fi	Sara	bísī
	Baka	ɪsï
F4	Mangbetu	nesi
F6	Baledha	tsée
L	Ari	aksi
M	Orig	wùsù

'fly' (insect)

E2	Majang	kayaŋ
	Murle	kiroŋit
E9a	Jange	luaŋ
E9b	Lotuko	najaŋāti
E9c	Nandi	kaliaŋ
F1	Yulu	cɔŋɔ
G	Undu	hɔrəŋ

'three'

F1	Bongo	müta
	Baka	ɔta
F4	Mangbetu	sɔ́ta

'tooth'

E1	Kenzi	nel
	Debri	jɪldo
	Medob	kəddi
	Birgid	ɲildi
E5	Dinik	ŋgíl
	Nyimang	èlè
E9b	Bari	kele
	Lotuko	nālā

What is the explanation of these form-meaning similarities? Two possibilities can be dismissed at once: chance convergences or separate roots in most cases. The similarities are too widespread and pervasive (beyond the examples given, of course) to give any credibility to these. Two other possibilities are more attractive: the items are essentially all roots and show phonological correspondence of root consonants, or the initial and final elements are more often affixes. The latter hypothesis seems to me to be compelling because (a) some items definitely contain affixes of known function, e.g. singulative -t in Murle, and (b) there are patterns in the distribution which support analysis as affixes.

One such pattern is the frequent presence of an initial, usually kV-, but also tV- or others, against its absence, even within the same language group or language. This was noted by Greenberg (1963:116) in connection with kV-, and will be discussed further under 5.1 below.

Another pattern is that of occasional correspondence of prefix and suffix in presumably cognate items. Examples:

'foot'	E6	Dese	ɔ́llòk,	F1	Sara	gɔ̀l			
'night'	E2	Muguji	mɪk^{y}ɪri,		Majang	kaay,	M	Orig	kìrìm
'red'	A	Songay	karey	E1	Kenzi	aro,	E3	Nera	ə'rɛɛŋku
'warm'	A	Songay	konna	E9b	Lotuko	onok			

The following sections deal with specific affixes. Note beforehand that it is important to set aside cases of initially duplicated syllables, which are affixes of a special type, not to be included as instances of **kV-** or other prefixes in general. Examples, using the gloss 'tree bark': A Songay **kokosi**, I Kwama **qɔq'ɔš**, cf. E2 Muguji **kieeši**, E5 Dinik **kwúsiya**; H Kunama **amboŋa**, Ilit **bobaŋga**; another: 'small' I Sai **du-duuma**. Many other such examples can be found.

5.2 "MOVABLE *k*"

Examples of Nilo-Sahelian (presumed) cognate items with initial k(V)- and corresponding Ø- abound in E1, E4, E5, E6, E7, E8, E9, E10, all F, and H. The initial k- is generally retained in B, C, E2, E3, and I. It is generally absent in G. A few cases occur where A has **k-** and other groups have Ø- or vice-versa. Family D (Fur) is hard to judge, because of the general **d-** sg./k- pl. pattern.

In non-Nilo-Sahelian, there are no really good examples to support the idea of k- vs. Ø- in K, L, and O. In M (Kordofanian) examples occur involving presence or absence of **k-** and other noun-class prefixes. A few weak examples are found in N (Niger-Kongo), where noun- class systems are also found, largely in vestigial form (except of course in Bantu, where they are most developed of all). The examples involving P (world controls) must be assumed to be pure chance (e.g. Basque has an initial element **he-** of unknown function).

Space considerations preclude listing examples herein except as they occur in other connections. The papers by Hutchison and Stevenson in this volume give many examples, especially for B (Saharan) and E5 (Nyima) as against other languages, and Greenberg 1963 also gives examples.

5.3 ANIMATE *kVn*- PREFIX

A prefix of general form **kVn-** or **hVn-** occurs in several groups with animates and a few other categories (celestial objects, fire, smoke). The final **-n** of the prefix often assimilates to following consonant. The relation of this prefix to Songay **ham** 'meat' seems likely, given such forms as Songay **ham-isa**, 'meat of the river', i.e. 'fish'. Examples:

A Songay: 'meat' **ham**; 'dog' **han-ši**; 'fly' **ham-ni**; 'hair' **ɲim-biri**;
'star' **han-darey**.

B Saharan: Kanuri 'nose' **kə́n-zà** (cf. Karda **cá**); Kanuri 'moon' **kə̀n-tágə̀** (cf. E2 Mursi **táagi**). Hutchinson gives many examples of k- prefixes, including **kVn-** forms in his paper in this volume.[5]

C Maba: Maba 'mouth' sg. kan-a/pl. kan-tu; Mesalit 'person' kaaŋ-gì cf. F1 Baka ji); Maba 'bone' kan-ji-k, Mesalit kə̄n-jɪ.

F Central Sudanic: F1 Kara 'meat' han-da (cf. Bagirmi ja, F6 Baledha za, etc.); F1 Sinyar 'moon' kwan-jʌ(n); Kara 'foot' kàn-zà, F4 Mangbetu kɔ̀n-zɔ̀ (cf. Bagirmi n-jà).

N Proto-Bantu: 'skin' kan-da (cf. M Kadugli t̻ɔ-, Eliri kɛ́ɛ́-d̻û).

5.4 PREFIX *bV-*

Although not so frequent as k-, t-, or n- prefixes, occurrences of a likely prefix of form b(V)- with substantives are particularly striking. Some examples:

'black': B Berti: bu-kuli, F1 Baka bú-kúlò (cf. E2 Murle kɔ́ɔ́li, F1 Bagirmi ʔìlì); E10 Ik bu-'ɗam.

'claw': E2 Bodi bʊ-tʊl, Bale tɪrtɪrre.

'cloud': I Sai bə-pula (cf. E2 Muguji pòolá).

'dog': F1 all bisi except Baka ɪsï (and Sinyar bɪsar(n)); see 'dog' under 5.1 above).

'horn': G Undu bʊ-lʊŋ (cf. E9a tuuŋ).

'snake': I Anej bəmba (cf. N Fula mbo, Twi ɔwɔ, Zande wo), Komo dàšó?, Twampa tàšá?, Kwama bwašu.

'warm': C Maba boŋgo, Mesalit ʔɰɲà.

5.5 OTHER AFFIXES AND SEMANTIC CORRELATIONS

I have also investigated the occurrences of widespread prefixes of forms N-, T-, j- (rare), l-, m-, s-, V-, and suffixes of forms -T, -K, -N, -B, -L, -m, -s, -ci, and miscellaneous. Some of these are considered also by Stevenson in his article in this volume. Of course this work is preliminary and awaits refinement by coordinating the detailed work of specialists on the various families and sub-families, as well as expansion of the data base. My basic list includes 34 items I consider as A "animate" (23 body parts, 8 animals, plus 'egg', 'meat', 'fat'), six V "vegetables", 19 Q "qualifiers", 14 N "natural" (other than animal or vegetable), 19 Vb (verbs), and six grammatical items plus 'name' which were excluded from consideration.

A summary of distributions (taking into account the various sizes of the semantic classes) follows: K is high as Q suffix, low as Q prefix; B is high with V and N as suffix, high as Q prefix, low as V prefix; N is high as Q prefix and suffix, low as V and N prefix; T seems to be an animate suffix, but low as Q

suffix and N prefix and suffix; L seems to be an animate prefix and Q or natural suffix; M is a qualifier suffix and N prefix or suffix; S is a Q prefix and animate suffix; j is a qualifier suffix; a- occurs with qualities and natural, o- occurs with qualities.

5.6 INTERPRETATION

For lack of space, I will not be able to present the extensive examples needed to make the full case for the following tentative reconstructions. The few most revealing instances will be given.

'fire' *ku-zu-go

B Berti azza; C Maba uosi; F3 Moru así; F6 Baledha kazz; I Anej kəs; M Moro isia, Kadugli íssi; N Twi odža. E1 Kenzi iig, Birgid uzug; E2, all but Majang: gu or go; E7 Tama ū, Merarit usugú; F4 Mangbetu kagɔ; P Basque su. Cognate forms for 'burn' are found in E1, E2, E5, E 6, E8, E9b, E10, F1, F3, F4, I, L, N.

'fish' *ku-lug-ut

E2 Murle kulug-, Mursi urguθi, Zilmamu ulugut; E4 Aka ʊ́ʊgù, Kelo ùu; G Undu igʊθ; M Kadugli kilɔ́ɔgɔ; N Fula liiŋgu. Related forms in (k)VR in E1, E2, E4, E6, E8, E9, E10, F4, L.

'knee' *ku-tuŋ-at

C Mesalit kaddɪɲɔ; E1 Debri kwutu; E2 Zilmamu kušuŋat; E4 kʊsu(mi); E9c kutuŋ; E10 kutuŋ, kutum; F4 Mangbetu -káati; G Undu gʊšʊŋ; I Shita k'otɛl; N Twi kotodžw; E9a Ragreg ɗʊŋ; H Kunama tùgà; I Kwama ɗugʊl. Cognate forms of shapes *(k)uN, *(k)ur, *kVj, *dum in many other groups.

'mouth' *ku-tu-k

This root was given under East Sudanic isoglosses in Table 2 above; it could be extended to a possible Nilo-Sahelian isogloss if forms such as tɪ, cɪ, ta(r), and t'(w)a in B, F1, F3, F4 and I are related to it. The root would then be something like *tV and the affixes later developments.

'three' *ko-tVs-ig

Besides the East Sudanic families listed for this root in Table 2, related forms are found in A, B, D, I, M and P. Examples: A Songay za; B Kanuri yàská; D Fur iis; I Kwama twazan; M Orig -ìttá, Eliri -át̻t̻âk; P Burushaski usko.

These and other examples suggest a Proto-Nilo-Sahelian root having both prefix and suffix, the prefix often (but not always) being kV-, the suffix showing

C Maba: Maba 'mouth' sg. kan-a/pl. kan-tu; Mesalit 'person' kaaŋ-gì cf. F1 Baka ji); Maba 'bone' kan-ji-k, Mesalit kə̄n-jɪ.

F Central Sudanic: F1 Kara 'meat' han-da (cf. Bagirmi ja, F6 Baledha za, etc.); F1 Sinyar 'moon' kwan-jʌ(n); Kara 'foot' kàn-zà, F4 Mangbetu kɔ̀n-zɔ̀ (cf. Bagirmi n-jà).

N Proto-Bantu: 'skin' kan-da (cf. M Kadugli t̠ɔ-, Eliri kέέ-d̠û).

5.4 PREFIX *bV-*

Although not so frequent as k-, t-, or n- prefixes, occurrences of a likely prefix of form b(V)- with substantives are particularly striking. Some examples:

'black': B Berti: bu-kuli, F1 Baka bú-kúlò (cf. E2 Murle kɔ́ɔ́li, F1 Bagirmi ʔìlì); E10 Ik bu-'ɗam.

'claw': E2 Bodi bʊ-tʊl, Bale tɪrtɪrre.

'cloud': I Sai bə-pula (cf. E2 Muguji pòolá).

'dog': F1 all bisi except Baka ɪsï (and Sinyar bɪsar(n)); see 'dog' under 5.1 above).

'horn': G Undu bʊ-lʊŋ (cf. E9a tuuŋ).

'snake': I Anej bəmba (cf. N Fula mbo, Twi ɔwɔ, Zande wo), Komo dàšóʔ, Twampa tàšáʔ, Kwama bwašu.

'warm': C Maba boŋgo, Mesalit ʔuɲà.

5.5 OTHER AFFIXES AND SEMANTIC CORRELATIONS

I have also investigated the occurrences of widespread prefixes of forms N-, T-, j- (rare), l-, m-, s-, V-, and suffixes of forms -T, -K, -N, -B, -L, -m, -s, -ci, and miscellaneous. Some of these are considered also by Stevenson in his article in this volume. Of course this work is preliminary and awaits refinement by coordinating the detailed work of specialists on the various families and sub-families, as well as expansion of the data base. My basic list includes 34 items I consider as A "animate" (23 body parts, 8 animals, plus 'egg', 'meat', 'fat'), six V "vegetables", 19 Q "qualifiers", 14 N "natural" (other than animal or vegetable), 19 Vb (verbs), and six grammatical items plus 'name' which were excluded from consideration.

A summary of distributions (taking into account the various sizes of the semantic classes) follows: K is high as Q suffix, low as Q prefix; B is high with V and N as suffix, high as Q prefix, low as V prefix; N is high as Q prefix and suffix, low as V and N prefix; T seems to be an animate suffix, but low as Q suffix and N prefix and suffix; L seems to be an animate prefix and Q or natural suffix; M is a qualifier suffix and N prefix or suffix; S is a Q prefix and animate suffix; j is a qualifier suffix; a- occurs with qualities and natural, o- occurs with qualities.

5.6 INTERPRETATION

For lack of space, I will not be able to present the extensive examples needed to make the full case for the following tentative reconstructions. The few most revealing instances will be given.

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'fish' *ku-lug-ut

E2 Murle kulug-, Mursi urguθi, Zilmamu ulugut; E4 Aka ʊ́ʊgʊ̀, Kelo ʊ̀u; G Undu igʊθ; M Kadugli kilɔ́ɔgɔ; N Fula liiŋgu. Related forms in (k)VR in E1, E2, E4, E6, E8, E9, E10, F4, L.

'knee' *ku-tuŋ-at

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This root was given under East Sudanic isoglosses in Table 2 above; it could be extended to a possible Nilo-Sahelian isogloss if forms such as tɪ, cɪ, ta(r), and tˈ(w)a in B, F1, F3, F4 and I are related to it. The root would then be something like *tV and the affixes later developments.

'three' *ko-tVs-ig

Besides the East Sudanic families listed for this root in Table 2, related forms are found in A, B, D, I, M and P. Examples:

A Songay za; B Kanuri yàskə́; D Fur iis; I Kwama twazan; M Orig -ìttá, Eliri -át̠t̠âk; P Burushaski ʊsko.

These and other examples suggest a Proto-Nilo-Sahelian root having both prefix and suffix, the prefix often (but not always) being kV-, the suffix showing more variation. For example, one of the three roots for "tongue" which account for nearly all Nilo-Sahelian forms is something like **•nelep**; another is **•dem**, often with a **tə-** prefix (the third is **•ka(l)ad**).

In conclusion to this discussion, I would like to suggest four possible insights into the infant science of comparative Nilo-Sahelian:

1. The root in Proto-Nilo-Sahelian (PNS) was probably monosyllabic of shapes CV and CVC, to which were adjoined both prefixes and suffixes, some of which were later reinterpreted as root consonants in daughter languages. This would account for the kinds of variations seen at the beginning of 5.1 above. Given the limited possibilities of monosyllabic roots, PNS must have been a tone language. Thus A.N. Tucker's characterization of Sudanic languages as monosyllabic and tonal may turn out to be true in a deeper sense, despite the obvious counterevidence from some contemporary languages.

2. The sort of root described above is identical to what Welmers (1973: 185, 207ff, and elsewhere) suggests for Proto-Niger-Kordofanian with one caveat: the Nilo-Sahelian affixes are not known to be noun-class markers. But this caveat must now be faced up to. Gregerson (1972) proposed uniting Niger-Kordofanian and Nilo-Sahelian in a "macro-monstrous" Kongo-Saharan phylum. The evidence he gave was similar to that given here (plus other kinds of considerations), but the present treatment draws on much data which were not available to Gregerson.

I found the following plausible correlations between affixes in Nilo-Sahelian and those in Niger-Kordofanian as listed by Greenberg 1963, Welmers 1973 and elsewhere:

(i) N-S suffix **-k** (qualities) with N-K Class 7 prefix **k-** (manner/style);

(ii) N-S affix **m** (natural) with N-K prefix **(m)o-** of Class 3 (including a variety of inanimates);

(iii) N-S suffix **-b** (vegetable, natural) with N-K Class 3 prefix **(m)o-**;

(iv) N-S prefix **l-** (animate) with N-K Class 5 prefix **le-** or Class 11 **lo-** (former includes paired objects, latter includes long, thin objects: 'eye' and 'tooth' occur with **l-** in N-S as well as 'feather', 'long', 'tail', 'tongue'; part of this was pointed out by Gregerson).

As explained by Welmers (1973:185) one cannot expect to find much detail about noun-class affixes in the proto-language, because so much innovation has taken place in daughter languages.[6]

3. Further support for Kongo-Saharan emerges from the fact that Kordofanian and Niger-Kongo languages often fall in with Nilo-Sahelian cognate sets, both

as to root and affixes. Whether this is significant (e.g. compared to instances of such with other units such as Indoeuropean, Afroasiatic, Khoisan and even the world controls) remains to be seen. My impression is that the answer will be "yes".[7]

In separate contributions to this book, Creissels demonstrated that Songay is as close to N-K Mande languages as to N-S families, and Schadeberg demonstrates that Kadugli is not Kordofanian. Newman (1980) found that Omotic shows almost nothing to place it with Afroasiatic (and I gave such indications in Bender 1975). My one Omotic sample language, Ari, joins Nilo-Sahelian in many cognate sets. I suspect that we are on the verge of a realignment of African language phyla: Kongo-Saharan, including Niger-Kordofanian and Nilo-Sahelian as the major branches, with Songay, Kadugli, and perhaps Omotic being members at some level: perhaps Mande-Songay is a third major branch.

I cease these speculations here. I believe that informed speculations are useful, and I hope that this paper stimulates further work leading to resolutions of some of the open questions.

6. THE *K-B* CONNECTION

6.1 DATA AND ANALYSIS

As noted in 3 above, there are an abundance or roots of general form **KVR** and **BVR** in Nilo-Sahelian (often reduced to **KVY**, **KV**, **BVY**, or **BV**). Several attempts to find patterns in the distribution of such roots have led to a very shaky hypothesis (to be given in 6.2).

Several problems bedevil any attempt to find a distributional pattern: when are **k-** and **b-** prefixes, and when are they root consonants? when does a **VC** root (e.g. **-or**) belong with **k-** and when with **b-** (or neither)? when does a root of form **cVR** result from **kVR** by palatalization and when from **tVR**?

My initial attempt was to look at all cases of **KVR** and **BVR**, but later attempts simplified this by looking only at cases where **KVR** or **BVR** (and their associated **VR** roots) dominated at least one group. The results are quite similar, and only the second method will be discussed here.

Two kinds of counts were undertaken. First was the number of times a **K** root dominated a given group against a **B** root in at least one other group, and conversely for **B** root against **K** root. The leaders are:

K Root		B Root	
Group A	35 instances	Group E2	20 instances
C	29	E4	45
D	27	E5	25
E1	35	E8	25
E3	20	E9b	20
E6	36	G	23
E9c	20	others less than 20 each	
others less than 20 each			

The second count was of group against group: how many times did a K root dominate Family A against a B root dominating Family B, and conversely, etc. for each group against each other. Numbers less that three were discounted. The result can be presented as a partial ordering:

> Groups A, C, (D), E1, (E3), E6, (F3) preserve K in cases where Groups (E2), E4, E5, E8, (E9a), (F1), G, (K) preserve B in 58 cases out of 65 (groups identified in parentheses appear four or fewer times in the pair-wise comparisons). In addition, C has K where A has B, E2 has K where E5 has B, E5 has K where E8 has B (this holds in 9 out of 10 cases attested).

Thus we can say that A, C, D, E1, E3, E6 and F3 are K-preserving, while E2, E4, E5, E8, E9a, F1, G and K are B-preserving. Within the first group, no comparisons happened to occur except that C precedes A in preserving K, whereas in the second group, E2 precedes E5 and E5 precedes E8 in preserving K, while E2 and E8 are not directly comparable (so that C is strongest K-preserver and E8 is strongest B-preserver).

A final attempt was made to eliminate cases where Ø- alternates appeared (since it is sometimes ambiguous as to whether a VR root belongs with K- or B-). This had the effect of reducing the K-preserving group to A and C and the B-preserving group to E4, E8, E9a and G, with also some partial ordering among other East Sudanic families.

6.2 INTERPRETATION

I will now state the shaky hypothesis anticipated above: Families A, C, D, East Sudanic sub-families E1, E3, E6 and Central Sudanic sub-family F3 have initial K- where East Sudanic E2, E4, E5, E8, E9a, Central Sudanic F1, and Family G have initial B- (omitting the weak occurrence of family K, Indoeuropean, with the B- preserving group). Generalizing a bit, one can say that: A, C, D and some East Sudanic sub-families preserve **K**- where other East Sudanic sub-families and Berta have **B**-. Families B (Saharan), F (Central Sudanic), H (Kunama), and I (Komuz) do not have enough instances of the **K** vs. **B** root dichotomy in my data set to appear significantly.

This tentative isogloss is obviously shaky, since once again the question of whether it is one of phonological correspondence or class prefixes arises, and the data set and analysis are still problematical. It seems that the distribution is not strongly dependent on the interpretation of **K**- and **B**-, since omitting Ø- alternates did not shift any group, but only reduced the number of cases which could be counted. Another problem is that it bisects the large East Sudanic Family (and also Central Sudanic, but the numbers of instances are quite small). One should not be disturbed at this incongruity since (a) the nine families A-I are not based on other firmer isoglosses, but mainly on counts of lexical and morphological similarities, and (b) as Anttila (1972:304-306) points out, individual isoglosses within well-established phyla such as Indoeuropean cross-cut each other, and interpretation of isogloss bundles is not an exact science.

The K-B isogloss suggested here may be similar to the Indoeuropean "satem--kentum" one: it need not be taken as the basic isogloss of Nilo-Sahelian, and may even not be one of those forming a sizable bundle. Nevertheless, as far as I know, this is the first isogloss approaching the orthodox type to be proposed for Nilo-Sahelian.

Future work will extend the investigation to a more adequate base, and will include the **TVR** roots which are also frequent but less prominent in Nilo-Sahelian. I regret having to postpone the exhibition of examples supporting this preliminary isogloss to a more extensive future publication.

NOTES

* I am glad to acknowledge the following for partial support of my travel to the First Nilo-Saharan Linguistics Colloquium: Department of Anthropology, College of Liberal Arts, and International Education Office (all of Southern Illinois University, Carbondale). I am also grateful to Gabriel DeCicco for help and encouragement in the intermediate stages of this work.

1. The terms "phylum" (pl. "phyla"), "family", and "sub-family" will be used in a strict hierarchical sense (thus Nubian is sub-family E1 of the East Sudanic Family E, which in turn is a family of the Nilo-Sahelian phylum). The term "group" will be used to refer to any of these units. The term "sub-sub-family" will also be used with transparent meaning in referring to E9a, E9b and E9c.

2. In looking for East Sudanic isoglosses, I found seventeen forms dominating five or more East Sudanic families. Most of these also dominated other families,

but no pattern of collective domination of families E, F, G, H (Greenberg's "Chari-Nile") occurred, though these four were among those most frequently dominated. The numbers are: A: 7, B: 3, C: 7, D: 11, F: 8, G: 10, H: 8, I: 4. Families B (Saharan) and I (Koman) are weak, but the numbers involved are too small to allow saying any more than this.

3. (a) Read starred forms, e.g. *SVLi, as 'something like' in this paper.
(b) Capital letters are used to represent archiphonemes; read them as, e.g., **R**: something like **r**, etc.; V is a vowel in general.
(c) Related roots occur which may extend 'bird', 'head', 'knee', 'mouth', 'three' to a wider scope (e.g. *kVl and *do may extend 'head' to a Nilo-Sahelian isogloss or a wider East Sudanic one; similarly for *ta(r) and *t'(w)a for 'head'; North Nilotic *adak and E10 Ik **a'dat** may extend the scope of 'three'; E8 *sVm may belong with the set for 'knee'; E8 *pədax may belong with the set for 'three'.
(d) 'knee' is the most widespread Nilo-Sahelian isogloss I have encountered. When I revised my 100-item basic list in about 1973, I took up Hal Fleming's suggestion to include 'knee', based on his observation that it has a very widespread common form in African languages.
(e) 'moon, star, sun' with forms **KVR**, **BVR**, **TVR** was later added. It dominates seven E.S. sub-families (all but E1, E7, E10), seven N-S families (all but C and G), but also K, L, M and appears in C, E7, E10, N, and P.

4. Note also Amharic **wɪšša**, said to be from Sidamo **wɔšš-ico**. The root is apparently widespread in Africa.

5. Could Kanuri **tʊ̀r-kɔ́n** 'claw' be included here with **-kVn** suffix? (cf. E2 Bale **tɪrtɪrre**, Bodi **bʊ-tʊl**).

Hutchinson suggests Kanuri **kan-nu** 'fire' as a loan from Arabic **nur**; in view of A Songay **nunè**, B Karda **wún(í)**, I consider the analysis as **-nu** with prefix **kan-** more likely (cf. 'smoke', Kanuri **kan-jê**, Karda **ìzzí**).

6. With respect to possible noun-class prefixes linking N-S and N-K, another interesting example has come to my attention: 'ashes' has a large cognate set dominating A, C, E1, E2, E3, E5, F1, F4, G and I. Several prefixes and suffixes occur (including **-k-** in both types). Among the forms occurring are: E1 Kenzi, Birgid **uburti**, Medob **upudi**; E3 Nera **hɪbɪd**; F1 Sinyar **kabuur**, Bongo, Bagirmi **buruku**, Baka **mbuku**; F3 Logbara **ɔfɔra**; K Indoeuropean **per-q** (coincidence?); B Karda **tífi**; M Moro **ubwana**. Note that also Proto-Bantu **bʊ** belongs to this set. One very interesting point is the **u-** prefix. Is it just coincidence that present-day Swahili has **u-** prefix for some powdery substances, a reflex of classes 11/14 **lo-/ʊo-** in Proto-Bantu? Finally, two instances of the related word 'sand' have suffixed **-Vl** (E4 Aka **a-ssɛss-ɛl** and E9a Burun **teŋ-ɔl**).

7. Note the three classes of domination of M in Table 3; in Tables 1,2 and 3, the totals are K: 5, L: 2, M: 4, N: 3, O: 3, P: 2. A trend appears to be present, but a larger sample is needed.

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Christopher Ehret

The Classification of Kuliak

1. The Kuliak languages of northeastern Uganda - Nyang'i, Ik, and Soo (Tepeth) - remain still inadequately known. The notable collections of data are Tucker's (1971-73) for Ik and Soo, Crazzolara's (1967) for Ik, Ehret's (1974) for Soo, and Heine's (1974/75, 1975/76) for all three; Laughlin (1975) may also have good data on Soo. Only Heine has done the decent thing and made his data fully available, and because he collected from all three languages, he has been able to carry the work into a further arena, offering a first reconstruction of proto-Kuliak. Heine (1976) leaves the question of Kuliak's wider relationships unresolved; the writer, with only Soo data available to him (Ehret 1974), adduces lexical and affixial parallels favoring a Nilo-Saharan affiliation for the group. The aim of this paper is to propose again the probability of Nilo-Saharan relationships for Kuliak. This effort yields an unexpected dividend, the first inklings of a plausible proto-Nilo-Saharan consonant system.

2. In place of Heine's proto-Kuliak consonant scheme the following substitute scheme seems more probable from correspondence and occurrence patterns and has a more natural symmetry of elements:

ɓ	ɗ	'j	'g	'gw	
b	d	j	g	gw	
p	t	c	k	kw	ʔ
		c'	k'	k'w	
	s				
	l, ɬ, r				
m	n	ɲ	ŋ	ŋw	
w		ẏ			

Heine's *h is changed to *ʔ in this set-up, for reasons of systemic symmetry and because loanwords with original glottal stop give Heine's *h in Kuliak.

An additional possible item is the source of Soo /ṣ/. The rather noticeable gap in the consonant pattern above, which the natural frequencies of consonants would lead one to expect to be filled, is the alveolar ejective slot.

Perhaps therefore the source of the set Soo ṣ / Nyangi s / Ik ts was *s', represented as PK and PWK *ṣ in the materials below.

3. In what direction do the relationships of Kuliak lie? Two sorts of evidence, phonological and lexical, can be turned to here.

The first sort of evidence can be no more than a weak indicator. A phonological system by itself contributes only to typological analysis. Comparison of two systems cannot demonstrate relationship of the two possessor languages of the systems. On the other hand, if two languages are related, underlying systemic resemblances in their phonologies can remain even after long divergence. And while comparability of consonant systems does not necessarily indicate relationship, a fundamental incomparability of consonant systems makes anything but the most remote of relationships improbable.

The PK system proposed here has certain features that are pan-familial in Africa and thus not distinctive. The existence of separate full velar and labialized velar columns in the pattern is reconstructable for Cushitic and apparently Afroasiatic in general, although lacking in particular branches; Southern Cushitic, Agaw, and Beja attest this feature (Ehret 1979) as does Chadic (R. Schuh, personal communication). It is also a probable reconstructable feature in a scatter of Nilo-Saharan languages: Central Sudanic (Ehret and Saxon, forthcoming) and other cases inferable from the Kuliak lexical comparisons below. The existence of ejectives is also a feature commonly thought to be Afroasiatic which appears in both Nilo-Saharan and Khoisan: here we can draw attention to proto-Central Sudanic (Ehret and Saxon, forthcoming), the Koman and Gumuz groups, and Wetawit (Berta).

The provisional PK consonant system has, however, three distinctive systemic characteristics that align it with one of the possible African super-families to which it could be related, and against the other two. The first characteristic is the fundamental division of the voiced stops into two full parallel sets, implosive and non-implosive respectively. Implosives are known in some Afroasiatic languages of tropical Africa and rarely in Khoisan (leaving aside the ingressiveness of clicks), but rarely if ever as part of full contrastive subsystems of implosive versus explosive. In Nilo-Saharan languages, on the contrary, such contrast is not uncommon. The parallel between PK and proto-Central Sudanic (PCS) systems is particularly close. Both have four full or nearly full series of stops, which further can be paired according to voicing. They have voiced and voiceless glottalized series (the implosives and ejectives respectively) and voiced and voiceless plain stop series. Afroasiatic languages have at most three stop series; Khoisan at most two such series.

The second diagnostic characteristic of the PK consonant system is the presence of a full set of regularly occurring primary palatal consonants, including actual palatal stops and not just palatal afficates, and a common palatal nasal. In Afroasiatic reconstruction the palatals seem in almost all cases to be secondary, deriving from alveolar or velar originals; in Khoisan palatals are infrequent, although whether original or not remains to be seen. But in Nilo-Saharan languages palatal stops and palatal nasals are virtually universal and are of common lexical occurrence in all consonant positions.

The third characteristic is the occurrence of phonemic nasals at four points of articulation, labial, alveolar, palatal, and velar, with the velar nasal as common as the labial. This same distribution is general through most of Nilo-Saharan, even down to the commonness of the velar nasal. In contrast, palatal and velar nasals are entirely lacking or, in a few cases, of extremely rare occurrence in Afroasiatic languages. One exception is Agaw where ŋ is the normal reflex of earlier Cushitic ***m**. In Khoisan languages ɲ and ŋ are similarly infrequent.

The phonological evidence thus links Kuliak strongly, either areally or genetically, to Nilo-Saharan. It cannot, of course, by itself prove Kuliak to be a member of the family, but it makes such relationship a hypothesis worthy of careful study, and it comes close to ruling out Kuliak relationship to Afroasiatic or Khoisan at any point much nearer perhaps than proto-Sapiens.

4. The lexical evidence changes the Nilo-Saharan connection from hypothesis to tentative postulation. A variety of sources for Kuliak vocabulary items can be distinguished, some Afroasiatic and some Nilo-Saharan. A few Khoisan lexical parallels can be proposed, but none of these seem very strong. The problem is to distinguish lexical inheritance from lexical adoption. The key criteria would be systematic sound correspondences between Kuliak and non-Kuliak languages, and this cannot yet be properly established. So any solution now offered must remain to some extent tentative. Some rather arresting possible sound correspondence between Kuliak and certain Nilo-Saharan tongues will be suggested below, however, and these help to strengthen the case that will be made here.

As a substitute for systematic sound correspondence, we must rely on analysis of the semantic distribution of lexical parallels and on determinability or

-determinability of the particular sources of particular roots. The first iterion derives from the observation that loanwords are uncommon in certain ortions of vocabulary and that words for certain particular core meanings are ossibly never borrowed while others sometimes are. The second criterion takes note of the fact that borrowed words can potentially be traced to particular source languages (although after a long period such source languages become increasingly difficult to pinpoint), whereas inherited words will be randomly retained in varying shapes through a scatter of related languages. Non-determinability of the particular source of a set of words is thus evidence tending to demonstrate relationship among the languages having the words, while the occurrence of words in forms traceable to a particular language, or over long time periods, to a particular group of languages, tends to identify adopted vocabulary and thus indicate historical contacts rather than linguistic descent.

One source of distortion must be neutralized as far as possible in this analysis, and that is our extremely uneven knowledge of the languages with which Kuliak is to be compared. The problem is especially acute for the Nilotic and Cushitic languages, which are much better known lexically than are most of the Nilo-Saharan or Omotic tongues. From sheer quantity of information more comparisons with Cushitic and Nilotic might emerge. Control on this sort of distortion is provided by use of a consistent lexical sample. What has been chosen here is the 98-word list used by Bender (1971). It fulfills the requirements of a control in two ways. It has been collected for a considerable number of little-known Nilo-Saharan or putative Nilo-Saharan languages of the far eastern Sudan and for nearly all the Omotic and Cushitic languages, and it consists of portions of vocabulary - core vocabulary - for which borrowing can be expected to be minimal. ("Minimal" may still amount to several borrowings in situations of intense historical contact, however.) In five places on the list, different meanings have been substituted for those used by Bender, and the list has been brought up to a full hundred items.

In the table below, the column next to the English gloss contains those of the hundred items recorded for Soo (SO), Nyang'i (NY), and Ik (IK). Soo data is usually represented as the writer recorded it for the dialect of Mt. Kadam, sometimes with the [p] alternant of the /b/ phoneme and usually with the [θ] alternant of the /s~θ/ phoneme of that dialect. In a few cases Heine's data f the Mt. Moroto dialect has been utilized (and marked with (H)). Nyang'i and data are from Heine's collections (1974/75, 1975/76). Missing entries are ma ed with a double dash (--). Prosodic features have not been indicated becau

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uch elements remain unclear.

t column contains proto-West Kuliak (PWK) and proto-Kuliak (PK) re-
s. Soo and Nyang'i, as Heine has demonstrated, form a Western
uliak coordinate with Ik, and so roots limited to Soo and Nyang'i
certainly reckoned as PK as yet. The majority of reconstructed PWK
ts are from Heine 1976, though sometimes with modified representation
ants, and are marked with (H). A lesser number of reconstructions,
th (E), are taken from Ehret, forthcoming. In the last column lexemes
side Kuliak comparable to one or more of the Kuliak roots for each mean-
presented. To appear in that column, a word must have a very strong
c resemblance and be semantically very close to the Kuliak form. Compar
the writer considers at all questionable or far-fetched have simply not
included. (Comparisons of additional Soo vocabulary with Nilo-Saharan pa
is can be found in Ehret 1974:36-38; most of those, unless otherwise indi
ed below, still seem valid.)

		Soo *Nyang'i* *Ik*	*PWK:* * *PK:* **	*Other attestations*
.	all	SO **iɡ̣e** NY **daŋ** IK **tsiɗ**		NY-loan from Ateker; IK--Daju: Sila **saɗa**
2.	ash	SO **ukat, pl. uke** NY **ukwet** IK **kau**	***ukw** (H)	PWK--also SO **uk** 'to ki (***ukw**); Nubian: Nobi Dilling **ika** 'fire'; Central Sudanic (PC 'smoke'
3.	bark	SO **pεθ** NY **tɔdɔk** IK **bɔɗɔk**^{a}		SO--WNil ***paṯ**; We
4.	belly	SO **u** NY **uu** IK **bubu**	***uu** or ***ʔuu** (H)	PWK--Fazoglo **io**
5.	big	SO **waʔ** NY -- IK **zeh**^{a}		SO--ptSNil ***o** increase'; D Sila **weya** 'r

		Soo/Nyang'i/Ik	*PWK */ PK ***	*Other attestations*
6.	bird	SO gwek NY gwɛɛak IK gwah	**gwaik (H)	Tama wɪgɪt, pl. wɪgɪe, Merarit weegit, pl. weegan
7.	to bite	SO gɛm NY jɛm IK k'edz	*gɛm (H)	IK--Temein kɛ 'teeth'; PCS *'ki 'tooth'; Gumuz, etc. -k'ɨŋ 'to bite'
8.	black	SO iman NY imɛn IK buɗam	*iman (H)	PWK--cf. SO imɛn 'night', Nandi (SNil) koimen 'night'
9.	blood	SO θɛʔ NY se IK seh	**seʔ (H)	PCS *si and *siu 'sap, juice, fluid', etc.
10.	bone	SO ɔk NY ɔkat IK ɔk[a]	**ɔk (H)	ptSNil *kɔ:wɔ; ptENil *-(k)oi (sg. *-(k)oit-); PCS *kwa or *'kwa
11.	breast	SO nag NY kɔrtan IK id[a]	**id 'milk' (H)	PK--Nubian: Kenuzi er(ti); Didinga i:ra; Wetawit ɪrɪ:tu 'breast'; SO (PK *nak'w 'to suck' (H))--ENil *nak (same)
12.	to burn	--		
13.	claw, nail	SO saj[1], sak (H) NY kɔsɔkat, sag IK kɔrɔk	*sak/sag (E) **kɔsɔk (H)	Nara šokna
14.	cloud	SO tumuθ NY idet IK giɗ[a]		SO--Didinga, Murle tamu, Me'en tumo 'rain'; NY--Mursi ido, Kwegu i:do; Teso edou; IK--Gumuz gidi:da 'cold'; Kunama giggida 'cold'
15.	cold	SO cikwaʔ NY cukɛ IK eab[a]	?*cikwaʔ (E)	cf. Surma 'wet': Tirma ca:gi-, Murle cəkcəy; or else W.Rift So.Cush. *ts'aqwa 'wind; cold'
16.	to come	SO ac NY ac IK ats	**ac (H)	PCS *tsa; Ingessana (Gaam) caa- 'to arrive'
17.	to die	SO nyal NY gecon; IK bad	**nyal (E)	IK--SNil *par 'to kill'

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
18.	dog	SO kudɔ		SO--Dadog (SNil) g̨u:de:d;
		NY sak		IK--Kalenjin *ŋok; Ateker-
		IK ŋok^{a}		Lotuxo *ŋok (all Nilotic)
19.	to drink	SO wɛt	**wɛt (H)	cf. Surma: Mesengo ut-, Murle
		NY wɛɛt		wu:ɗe:
		IK wɛt		
20.	dry	SO iðege	**cai (H)	
		NY cai (v.)		
		IK tsa		
21.	ear	SO peθ	**beos (H)	PCS *bi
		NY bes		
		IK bos		
22.	to eat	SO g̨ab (*k'ab)		SO--Nubian: Nobiin kab; Surma:
		NY aj		Kwegu kab; NY (PK *ac' 'to
		IK nk'		chew')--Nubian: Nobiin ajj-,
				Dongola acc- 'to bite'
23.	egg	SO abeyɛ		IK--PCS *ɓu; SO--loan from
		NY --		Ateker
		IK ɓiɓ^{a}, pl. ɓiɓitin		
24.	eye	SO ɛk	**ekw (H)	Daju: Shatt yek- 'to know';
		NY ɛkw		Tama ik- 'to hear'; Nubian:
		IK ekw^{a}		Nobiin ukk- 'to hear'
25.	fat	SO muŋnat, pl. mukum	*gima? (H)	
		NY jimaat		
		IK ɛf^{a}		
	oil	SO g̨ima?, IK ceim		
26.	feather	SO kotop	**tuk (H)	SO (PK *tab-, *kɔtɔb- 'wing')
		NY tuke		--SNil *tapan- 'wing'
		IK tuk^{a}		
27.	fire	SO dak	*dakw (H)	Nara dok 'to be hot'; Kunama
		NY dakw		-tok- 'to burn'; Fur toke 'hot'
		IK ts'aɗ^{a}		Gumuz dawak 'warm'
28.	fish	SO kɔlɛ?	*kɔlɛ? (E)	PWK--Ateker *-kɔlɛ (loan from
		NY kɔleat		Kuliak?);
		IK ŋkolea		IK--loan from Ateker

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
29.	to fly	SO irib NY toporwe IK bɔr-ɔn, pɔr-ɔn		NY and IK--loans from Ateker
30.	foot	SO tɛɡ̣ NY tɛɡ̣w IK dɛ^{a}	*tak'w (H)	
31.	to give	SO mia? NY bɛɛ IK mɛ	**mɪa? (E)	PK--Luo miyo, etc.
32.	to go	SO ɡ̣au NY au IK k'ai	**k'ai or **k'a- (E)	Surma: Mursi oka, Kwegu ku, Murle akɔ; Nyimang kwa 'to go', kwu 'to come'; PCS *'ki; Gao (Songhai) koi, ko; etc.
33.	good	SO kolok NY dɛ IK da	**day (H)	PCS *dɔ 'real, true'
34.	grass	SO oo? NY o IK ku^{a}	**ọ? (H)	Teso akiot, pl. akwi 'leaf' (stem *-o-)
35.	hair	SO sij NY esim IK siits'^{a}	**siic' (H)	PK--Koman: Langa us^{y}ic'a 'root'; So. Omotic: Ari sits'i, Karo sitsi 'hair' (loan from Kuliak?)
36.	hand	SO an NY an IK kwɛt^{a}	*an (H)	PWK--general Nilotic root: WNil *an; ENil *-an (Maa *-aina); Temein n̪in̪at̪; Daju: Nyala ande, Shatt and-; also So. Omotic *an; IK--Temein kwi 'hands'; Koman: Langa k'wi 'hand'; cf. PCS *ku 'arm'?
37.	head	SO ik NY ik IK ik^{a}	**ik (H)	
38.	to hear	SO ibuɡ̣ NY ŋisuo; IK nɛs		

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
39.	heart	SO **buku** NY **bubur** IK **gur**^{a}	***bubur** (H)	IK--SNil: Dadog **gu:ro:ro:d**; PWK--Nyimang **buraŋ** 'body' (via earlier meaning 'chest'?); Ingessana **bora** 'shoulder'
40.	horn	SO **ɛb** NY **ɛb** IK **ɛb**^{a}	****ɛb** (H)	
41.	I	SO **aya** NY **ay** IK **nk**^{a}	***ay** (E)	PWK--Nubian: Nobiin, Dongola **ai**; Ingessana **a**; Songhai **ai**; Zaghawa **ai**
42.	to kill	SO **kɛn** NY **kɛn-u** IK **cɛ**	***kɛn** (H) ?****kɛ** (E)	Ingessana **kən-**
43.	to know	SO **yec, yes** NY **ec-, ideu** IK **iyes**	****iyec,** ****iyes** (H)	NY **ideu** -- see #69 below
44.	knee	SO **kutuŋ** NY **kutuŋ** IK **kutuŋ**	****kutuŋ** (E)	PK -- probably loan from SNil ***kutuŋ**; but root is separately present in SO **kɔðɔŋ** 'thigh' which seems a genuine cognate with SNil ***kutuŋ**; Surma: Murle **kodhoŋ**, Longarim **kudhuŋ**, Zilmamu **kušuŋat**; Wetawit **ku:šuŋ**; Ingessana **kusum**, all 'knee'
45.	leaf	SO **rom** (pl.) NY **rɔɔm** (pl.) IK **kak**^{a}	***rɔɔm** (H)	IK--Surma: Kwegu **k'akuto** (isolated occurrence)
46.	liver	SO **kewoo** NY **karor** IK **sakam**	***karor** (E)	PWK--Yaaku **qaroˀ**, pl. **qarora** 'bile'; IK--SCush ***sax-** 'bile; gall bladder'
47.	long	SO **igib** NY **ejib** IK **zikib**	**'**jẹkib** (E)	Eastern Cushitic: Qawko (Gawwada) **sikapa**, etc.
48.	louse	SO **gɛn** NY **jan** IK **ts'an**	****k'ɛn** (H)	

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
49.	man	SO ŋɛtat NY ŋɛtat IK nyɔt^{a} 'men', eakw^{a} 'man'	**ŋɛotat, pl. ŋɛot (H) **ɪakw (E)	pt-Kalenjin *ŋɛt- (not limited to two Dorobo dialects as Heine has it) Daju: Sila yoɠe, Nyala yohe
50.	many	SO wɛr NY napat IK komat	**oma? 'large' (E)	SO--Nyimang kwɛrɛn (k-prefix)
51.	meat	SO yei NY ye IK ɛm	*yey (H)	PWK--Daju: Shatt iya, Sila iye, Nyala iiye
52.	moon	SO awan NY araɠwan IK asan	*aragwan (H)	PWK--pt-Kalenjin *a:ra:wa
53.	mountain	SO arii NY lac, pl. laitin IK kwar; kuɓa	**ar- (E)	PK--SNil *kwa:Ri 'stone'[2] ('stone'↔'mountain' is a recurrent Sudan semantic linkage); IK kuɓa--Surma: Murle bey (also Mursi bɛ, Zilmamu bea 'stone'); Koman: Komo ɓe; CS: Madi ɓe
54.	mouth	SO ak NY ak IK ak^{a}	**ak (H)	Nubian: Nobiin aɠ, Dongola aɠil; Nara a^{w}lo; Ingessana oɬɠ; Daju: Nyala əkke, Shatt ik, Liguri əkk-, etc.
55.	name	SO yed NY edek IK ɛd^{a}	**yed (H)	Nubian: Dongola eri; Nilotic: Dinka rin, ENil *karin, SNil *ka:Rina (pt-Nil *-arin-); PCS *ru; Fur kario
56.	neck	SO mook[3] NY murut IK ɬo'ɠum		SO (PK *morok 'throat')--SNil *muRok 'throat'; NY--loan from ENil *mur(u)t; IK--loan from Cush.: pt-Lowland E.Cush. has *luk'um
57.	new	SO -- NY -- IK ɛrut, ɛruts		Nubian: Dongola er-; cf. Nara wɛr- ?

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
58.	night	SO **imɛn; mi** (H) NY **mir** IK **moku**	***miir** (H)	PWK--cf. Dahalo (SCush) **mir-** 'to spend the night'; SO--see #8 above
59.	person	SO **nɛb**, pl. **yok** NY **nɛb**, pl. **rub** IK **am**, pl. **roɓ**[a]	****nɛb** (H), pl. ****ruɓ** (H)	PK sg.--PCS ***mbi** (metathesis of ***nib**; see #60 following for same PCS shift)
60.	nose	SO **nyap** NY **nyabek** IK **ak'at**	***nyab** (H)	PWK--PCS ***mba** 'to smell' (pt-Moru-Madi reflex has meaning 'nose'; for same metathesis and cons. assim. see #59)
61.	one	SO **ɛdɛθ** NY **nardok** IK **kɔn**[a]	****ɛɗ-** (E)	Surma: Murle **adui**, Didinga **kodei**; Koman: Uduk, Komo **ɗe**
62.	other	SO **ɛdɛn**, pl. **esin** NY **ɛdɛn**, pl. **esin** IK **sa**	***ɛdɛn**, pl. **esin** (H)	PWK sg.--from same PK root as #61 preceeding
63.	rain	SO **war** NY -- IK **didi**	****war** 'to rain' (H)	PK--Tama **arr** 'rain'; Wetawit **rrɔ:** 'rain'; Nubian: Dongola **aru** 'rain'; Nil.: Dinka **uar** 'river', ENil ***-are** 'water, river', SNil ***aRin-** 'river'; PCS ***oru** 'sky'; Ilit (Kunama) **oor-a** 'rain'
64.	red	SO **du** NY **du** IK **ɗiu**[a]	****ɗiu** (H)	ENil ***do**; Surma: Mesengo **de**; PCS ***ɗ̣u** 'blood'
65.	road	SO **od** NY **od** IK **muice**	***od** (H)	PWK--pt-Kalenjin ***o:r**; Acholi **kor**
66.	root	SO **tɛgad** NY **tɛɠwad** IK **dakusɔk**	***takw'ad** (H)	literally 'foot of tree'; see 'tree'
67.	sand	SO **ɠim** NY -- IK **'jomọ'jomas**	****'giom** 'earth' (H)	Ingessana **gaam** 'country; hill, mountain'

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
68.	to say	SO **baa-** NY **dianic** IK **kut**	***di-an** (***di**) (H)	PWK--Kunama **-dɛ-**; PCS ***di** 'to speak'; SO--ptSoCush ***ba-**; cf. Ingessana **be-** 'to say, assert'
69.	to see	SO **iŋɛn** NY **ide** IK **ɛn; ɡon**	****iŋɛn** (E)	PK--Nandi **-iŋe-** 'to hear', Luo **ŋeyo** 'to know', etc. (all Nil.); IK **ɡon** --Sungor (Tama-Merarit group) **ɡo:n**; cf. also Nobiin **gu:nye**; Lotuxo **iɡony** ?; NY--Ingessana **ɛd** 'eye'; cf. also Surma: Mesengo **dɛ:n-** 'to see'; Ingessana **dɛn-** 'to look at'
70.	seed	SO **kinyomat** NY **kinyomat** IK **ekwɛɗ, pl. ekwin**	***kinyomat,** **pl. kinyom** (H)	PWK--early loan from early ENil or else separate borrowings by SO and NY from Ateker; IK--PCS ***kwi** or ***'kwi**
71.	to sit	SO **ɡemac** NY **ɡemec** IK **zɛk'w**^{a}	***ɡemec** (H)	
72.	skin	SO **kuṣ** NY -- IK **ts'ɛ**	***kuṣ** (H)	SO--Gao (Songhai) **kokosi** 'bark'; Kanuri **kaskaši** 'bark'
73.	sleep	SO **enuc** NY **rano** IK **ɛp**		IK--Ingessana **ab** 'to sit'
74.	small	SO **manaŋ; gwat** 'little' NY **mɛɛt; gutiid** IK **kwats**	****kw'ad** 'few' (H)	PK--Nubian: Nobiin **kid** 'some'; Nyimang **kɛd(ɪŋ)** 'small'; Maasai **kete** 'a little'; IK--Wetawit **k'ɔ:ts'i** 'small'; SO **manaŋ** --ptSNil ***mɪnɪŋ**
75.	smoke	SO **ar** NY -- IK **ts'ud**^{a}	****arir** (E)	PK--Nil.: Luo ***iro**; Maasai **-ir** 'to smoke'; pt-Kalenjin ***i:yet** 'smoke' (***i:Ret?**) and ptSNil ***aro:s** 'smoke'

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
76.	snake	SO **gogoi** NY **dɛu** IK **idem**	***dɛu** (H)	SO (PK ***k'ok'oi**) -- Surma: Zilmamu **kokiat**, Mesengo **kɔ:kɔ:**; Dongola **kak**; Sila (Daju) **ko:kei**; PWK--cf. Ingessana **dər**; Kunama **dɛrma** ?; IK--cf. Kw'adza (SCush) **idako** (stem ***id-**); Bukusu (Bantu) **endemu**
77.	to stand	SO **irany** NY **irianyu** IK **was**	***iriany** (H)	PWK--Kalenjin ***iyɔny** (***iRiɔ:ny**)
78.	star	SO **kɔkɛl** NY **kacerat** IK **ɗɔɨeat**		IK--Temein **dulɪt̪**, pl. **kʊdʊla**; NY--loan from Ateker; SO--loan from Pokot (Kalenjin)
79.	stone	SO **ratan**, pl. **rati** NY **sɔget** IK **gwas**	***sɔg** 'stone, mountain' (H)	IK--cf. Gumuz, Disoha **gi:ša** ?
80.	sun	SO **gi** NY **ji** IK **fet**	***gi** (H); ****giyẹkw** 'daylight' (H)	IK--Kalenjin ***pe:t** 'day'; PK--Ingessana **jiig** 'noon'
81.	to swim	SO -- NY -- IK **ilulum**		IK--loan from Ateker
82.	tail	SO **akoθemat**; **lado** (H) NY **tisit** IK **timoe**		SO--Ateker loans; IK--Koman: Uduk **t̪in**, Central Koma **si:n**; Kunama **ši:ma**; first Ateker form seen in SO can be explained as old IK loan in Ateker, as ***t>s~θ/__i,e** in Ateker
83.	thin	SO -- NY -- IK **ɪkar**		IK--loan from Ateker
84.	this	SO **nin** NY **anɛ**, pl. **ani** IK **ana**, pl. **ani**	****ana** or ****anɛ** (E)	Dinka **kënë**; Nandi **(n)i**; Nobiin **en**; Ingessana **-nɛ**; Kunama **-e:na**

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
85.	three	SO iyɔn NY iyɔn IK aɗat	*iyɔn (H)	PWK--ENil *uni; Didinga iyo, Murle i:yu (Surma)
86.	you (sg.)	SO biya NY bi IK bi	**bi (E)	pt-Saharan *b 2nd person marker
87.	tongue	SO ɛdɛɓ NY ɛdɛb IK nak'af	*ɛdɛɓ (H)	PWK--loan from Afroasiatic language, e.g. pt-E.Cushitic *ʕanrab- and S.Cush. *ʕaandab-; Kuliak shape most resembles S. Omotic shapes (see Bender 1971: 263-4), but these may also be borrowed from same extinct source language as the Kuliak form
88.	tooth	SO ilog̥, pl. ilg̥we NY eɨeg̥w IK kwa	*iɨVg̥w (H)	IK--PCS *'kwa 'to bite'; Gumuz k'wo:sa 'tooth'; PWK--loan from Cush. language; pt-Cush. *iɨkw-; but as in the case of 'tongue' preceding and 'neck' above, from a language not closer related than as a sister language to either pt-SoCush. or pt-ECush.
89.	tree	SO ad NY ad IK dakw^{a}; ats'a	*ad (H)	PWK--Nilotic; WNil *yat; ENil *yata; Daju: Sila ette, Nyala ette, Shatt ett
90.	two	SO nɛɓɛc NY nɛɛc IK lebets-at	**neɓec or **leɓec (E)	
91.	hot	SO aɓ NY aɓ IK haɓ	**ʔaɓ (H)	possible loan from Afroasiatic, of root meaning 'to shine' seen in pt-SoCush *ʕab- 'white' and Omotic *ab- 'sun'; but cf. Daju: Sila kibeya, Nyala tabi, Liguri təppai 'hot'; Murle ɑburr 'warm'

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestati*
92.	water	SO kwe? NY kwe IK cuɛ	**kwe? or **kwɛ? (H)	Ingessana kɔi ' *kuoţ 'rain'
93.	we incl.	SO inya NY ɡin IK njin[a]	**ɡin (E)	PK, also IK ŋɡw --Nara agga 'we mamu aɡi, Mursi aget, Tirma aɡe person sg. Nara Langa aga, Koma gessana aɡ- 'we
	we excl.	SO isia NY mis IK ŋgw[a]	*is (E)	
94.	wet	SO ɓaɓal NY -- IK ɗɔk'[a]	**ɗɔk' 'wet; mucus' (H)	PK--Lowland ECu Nil.: Acholi dy gessana ḍɔɡɔj ' SO--Lowland ECu
95.	what	SO ɛ? NY -- IK is		SO--PCS *ɛ 'som
96.	white	SO ɓej NY bej IK ɓets'[a]	**ɓec' (H)	pt-SoCush *beet 'sunlight'; Ome *bots 'white'; Soddo biš̌a, M mes bi:ša, etc land ECush: K 'red'; Kuliak borrowing fro of unplaced r Southern Cush
97.	who	SO ic NY ike IK ndo		IK--Ingessan dəi 'when?'
98.	woman	SO ɡwaθat, pl. ɡwaθ NY nyarbat IK 'ɡwasat, pl. 'ɡwas; cekam, pl. cek[a]	**'ɡwasat, pl. 'ɡwas (E)	

		Soo/Nyang'i/Ik	*PWK * / PK ***	*Other attestations*
99.	you (pl.)	SO **bitia**	****bit-** (E)	See #86 above
		NY **biyo**		
		IK **bit**^{a}		
100.	round	SO **mukul**	***mukuƚ** (H)	PWK--Kalenjin ***mukul**
		NY **mukuƚ**		(<***mukul**^{y} ?)
		IK **ɗukuɗ**^{a}		

5. The first evident pattern is that the convincing Nilo-Saharan, especially Eastern Sudanic, comparisons far outnumber the convincing Afroasiatic, usually Cushitic, comparisons in core vocabulary. Secondly, the Afroasiatic words tend to cencentrate in subsections of the list where borrowing less infrequently occurs: among adjectives, as 'long', 'white', and possibly 'cold', 'hot', and 'wet' (nos. 47, 96, 15, 91, and 94), and certain parts of the body, as 'tongue' (no. 87). There are a number of instances of words for this latter meaning being borrowed in East Africa; the borrowing of the word for tooth is more unexpected (no. 88). In contrast, Nilo-Saharan comparisons almost wholly account for the verbs, which except for the meanings 'swim' and 'fly' form a portion of core vocabulary almost impervious to borrowing, some like 'to go' and 'to eat' possibly never borrowed. Nominals like 'I' and 'eye' which are perhaps never borrowed also show Nilo-Saharan parallels. Thus the criterion of semantic distribution strongly favors a Nilo-Saharan relationship for Kuliak.

The second criterion, of the traceability of words to particular source languages, also supports a Nilo-Saharan relationship for Kuliak.

The Afroasiatic comparisons appear traceable to at least two different source languages; that is, they consist of words, some apparently, some demonstrably, loans coming from different Afroasiatic languages ar different periods in history. One source language, characterized by retention of the proto-Cushitic voiceless lateral *ƚ, today found only in Southern Cushitic, and by voicing of non-initial voiceless velars (k(w) > g(w) and *k' > *'g), gave the PWK words for 'tongue' and 'tooth' along with PK *ƚɔʔ for 'cow' and a number of other PWK and PK roots not noted on this list. The Ik word ƚo'gum 'neck' (no. 56) can also be attributed to this language. The language does not appear relatable either to Eastern or Southern Cushitic except as a sister language either of proto-Eastern or of proto-Southern Cushitic. The second Afroasiatic source language of loans in Kuliak maintained Proto-Cushitic (PC) *k' as /k'/ and voiced PC *ƚ, as the examples of Ik luk'- 'to swallow' and luk'um 'nape', both separately derived from the same root as that seen in Ik **ɨo'gum**, clearly show. The source of the set of words to which these two items belong can unambiguously be put in the Eastern branch of Cushitic. Additional Cushitic words, presumably also loans, cannot yet be certainly attributed to one or the other of these languages. The non-Eastern, non-Southern Cushitic donor language had its major effects apparently before the PWK period; penetration of its words even into core vocabulary for parts of the body suggests a pervasive cultural impact of its speakers on the early Kuliak. The Eastern Cushitic source language had its effects later, continuing after the break-up of proto-Kuliak since all but one ('long') of the clear Eastern Cushitic loans appear to be limited to particular Kuliak languages, normally either Soo or Ik, and its impact was not so pervasive or strong.[4]

A portion of the Nilo-Saharan comparisons also have particular traceability. There are several Ateker loans separately in the core vocabulary of each of the three Kuliak languages; these date to recent centuries. Pokot (Southern Nilotic) loans occur in Soo, dating very recently indeed. More difficult to interpret are a body of roots of identical meaning usually and the same or very nearly the same shape in both Kuliak and Southern Nilotic, very occasionally turning up in one of the other branches of Nilotic. Most of these can be traced back to PK or PWK and thus are at least as old in Kuliak as in Southern Nilotic. Many of them are surely loans, a few probably from Southern Nilotic into Kuliak (cf. discussion of 'knee', no. 44 above). Others may well be, as Heine (1976 and elsewhere) proposes, Kuliak loans into early Southern Nilotic, in an era when Kuliak speakers formed much more important populations.

But the major portion of the Nilo-Saharan comparisons in Kuliak cannot be explained by a history of contacts. The comparable items turn up in a wide scatter of Greenberg's Eastern Sudanic languages, often spoken far away from Kuliak, and in other Nilo-Saharan languages as well, and they frequently recur through several genetically as well as geographically distant groups. They show up, too, with the sort of semantic and morphological shifts that can be expected with long histories of divergence from a common ancestor: consider PWK ***dakw** 'fire' (no. 27), which from the other Nilo-Saharan attestations appears to derive from a verb originally meaning 'to be hot' or 'to burn'; or Soo **kɔðɔŋ** 'thigh' which corresponds to the Eastern Sudanic root with the clearly reconstructable meaning 'knee'. Sometimes this sort of change in shape or meaning is sufficient to allow us to rule out borrowing as the explanation of roots so far known only in Kuliak and nearby Eastern Sudanic languages, as for example Soo 'cloud' (no. 14), Ik 'to die' (no. 17), PK 'to see' (no. 69) and 'mountain' (no. 53), and PWK 'road' (no. 65), and choose common inheritance as by far the more probable solution.

6. Some apparent sound correspondences stand out, further enhancing the case for Kuliak membership in Nilo-Saharan. In a number of instances Kuliak has word-final ***d** for **r** elsewhere: cf. PK ***id** 'milk' (no. 11), ***yed** 'name' (no. 55), PWK ***od** 'road' (no. 65) and Ik **bad** 'to die' (no. 17). In other examples Kuliak word-final ***r** matches non-Kuliak **r**, but there the correspondences sometimes suggest another etymon, perhaps a trill, lying behind the difference; e.g. PK ***war** 'rain' (no. 63) where both Tama and Wetawit have a segment recorded as **rr** corresponding to PK ***r** (see also Ehret 1974:36-8). And an initial labialized velar in Kuliak requires a labialized segment in the corresponding word unless labialization has been generally deleted in the language involved; e.g., PK 'bird' (no.6) and 'water' (no. 92) and Ik **kwa** 'tooth' (no. 88) and **kwɛt**^{a} 'hand' (no. 36); whereas final labialized velars in Kuliak seem to give a simple velar usually, e.g., PK 'fire' and 'eye' (nos. 27 and 24).

The proposed PK phonemic distinction between implosive and nonimplosive voiced stops may maintain an older Nilo-Saharan distinction lost in many subdivisions of the family, as the correspondence patterns of PK ***d** and ***ɗ** suggest. The cases of PK ***ɗ** always match up in the lexical comparisons with voiced alveolars (PK 'red' and 'one' and Ik **ɗɔɬeat** 'star'), while Pk ***d** on the other hand corresponds to **d** in some languages and **t** in others (PK 'fire', no. 27, and PWK 'tree', no. 89). A natural course of sound change accounting for this situation would be the falling together of the two non-implosive stop series in some Nilo-Saharan languages, leaving the implosives to maintain the voicing contrast in stops.

An even more telling indication that the distinction is an old one comes from the Kuliak comparisons with proto-Central Sudanic and Koman, which like PK must be argued to have had full implosive and non-implosive voiced stop series. PK implosives, as reconstructed here, consistently correspond to implosives in PCS and Koman, while regular PK voiced stops correspond to the PCS non-implosives (cf. entries nos. 21, 23, 33, 53, 61, 64, and 68).

A further correspondence, suggested in a previous publication (Ehret 1974), of some Soo **g** with other Eastern Sudanic **k** can now be seen to reflect a correspondence closer to home, namely of some Soo **g** to PK ***k'**. The more general correspondence is thus of PK **k'** to simple **k** in other Eastern Sudanic. When occasionally such comparison sets can be extended to include languages with recorded velar ejectives - in particular Koman, Gumuz, Wetawit, and reconstructed Central Sudanic - then ejective-to-ejective pairings turn up. Initial PK ***k'** corresponds each time to Koman and Gumuz **k'** and PCS ***'k** (nos. 7 and 32). The ejective labialized velars in Koman, Gumuz, Wetawit, and PCS correspond curiously, however, to non-ejective PK ***kw** (no. 36, Ik 'hand', no. 74, Ik **kwats** 'small', and no. 88 Ik 'tooth'). At least one case of non-velar correspondence of PK ejective to Koman ejective also appears in the data, a correspondence of PK ***c'** to a **c'** in Langa (no. 35). The one correspondence noted of Wetawit **ts'** to Ik final **ts** (no. 74) may be another example if Ik **ts** in this instance is a reflex of provisional PK ***ṣ**, which was suggested at the end of section 2 above to derive from an underlying alveolar ejective.

The PK glottal stop also shows possible correspondences outside Kuliak, again in Central Sudanic where the segment was also phonemically distinct: note the pairing of Ik **hau** (*ˀau) 'hyena' (Heine 1975/76:47) with PCS ***-'wa** 'leopard' (Ehret and Saxon, forthcoming) and probably the case of PWK 'belly' (no. 4).

One other phonological parallel between Kuliak and its proposed relatives should be noted. PK had two laterals, ***l** and ***ɨ**, comparable to proto-Nilotic (PN) ***l** and a second lateral provisionally represented as ***lʸ** and denoting the correspondence of proto-Southern Nilotic ***lʸ**, proto-Eastern Nilotic ***j**, and Western Nilotic **l** (as in PSN ***kɔlʸɔːŋ**, PEN ***-ɔjɔŋ-**, and Luo **luaŋ** 'fly'). One clear case of a possible cognate embodying the correspondence of PK ***ɨ** and PN ***lʸ** has been noted in the Kuliak data available: PK ***ŋwal** 'to be lame, to limp' (Heine 1976:48) and provisional PN ***ŋwalʸ-** 'lame' (ENil ***ŋɔj-**: Masai **ŋɔjɪne**, etc.; SNil: Nandi **iŋwal**, etc.; WNil Lango **ŋwalo**). What this possible second lateral might correspond to in other Eastern Sudanic or Nilo-Saharan has not yet been investigated (but cf. Temein 'star', no. 78).

7. To sum up, the evidence all tends to require Kuliak membership in the Nilo-Saharan family. There is a significant body of Afroasiatic roots that has made its way into Kuliak languages, but at different times by borrowing from different Afroasiatic, apparently Cushitic, languages. There are equally significant sets of unique lexical sharings between Kuliak and Southern Nilotic; again a hypothesis of borrowing at different times is the best explanation for most of the sharings, though the directions of borrowing of particular words often remains unclear. The bulk of Kuliak core vocabulary has its convincing lexical parallels, however, in words scattered through a wide range of Nilo-Saharan

languages, a pattern difficult to explain by any other hypothesis than that of relationship. What is more, the beginnings of a pattern of sound correspondence between Kuliak and other Nilo-Saharan tongues seem also visible.

This last point may be of the most significance in the long run because the suggested correspondences hint at an at least remotely possible structure of the ancient Nilo-Saharan consonant system - an arrangement of the stops into four contrastive series: implosive, non-implosive voiced, ejective, and voiceless, with at least five potential points of articulation, plus accompanying nasals at each point:

ɓ	ɗ	'j	'g	'gw
b	d	j	g	gw
p	t	c	k	kw
	t'	c'	k'	k'w
m	n		ŋ	ŋw

No voiceless glottalized labial is suggested in the Kuliak data, but the tentative reconstruction of a rare Central Sudanic *'p (Ehret and Saxon, forthcoming) makes it a not inconceivable element of the pattern. Additional more probable consonants would be ?, w, y, l, ɬ or l^y, r, and trilled ř.

If the Kuliak relationship is as proposed here, and the PK phonology was as conservative as its striking correspondences with PCS and, to a lesser extent, Koman and Gumuz suggest, further investigation and field research on the Kuliak languages will be most important for the progress of comparative Nilo-Saharan studies.

NOTES

1. **saj** (underlying ***sag-**) is the Mt. Kadam dialect form; in several other cases the form given here differs from Heine's, presumably for the same reason.

2. Omotik **kwaita**, 'mountain', cited by Heine (1976:73) as a peculiar sharing between Omotik and Ik, is in fact the regular Omotik reflex of proto-Southern Nilotic ***kwa:Ri** 'stone'.

3. Heine has **tawad** as the Mt. Moroto dialect for 'neck', but in the Mt. Kadam dialect of Soo **mook** or **muok** means 'neck' and **tawad** means 'nape'. Heine (1976: 71, fn. 1) implicitly fails to recognize the possibility of dialect differences when he asserts without qualification that **tawad** is Soo for 'neck'. Similarly Kadam Soo uses **buku** for 'heart' and not **bubu** like Moroto Soo (see no. 39 above).

4. Two rather exact lexical parallels between Kuliak and South Omotic, nos. 35 and 36, must on distributional grounds be considered Eastern Sudanic, perhaps even Kuliak, loanwords in the Afroasiatic languages rather than the other way around.

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Thilo C. Schadeberg

The Classification of the Kadugli Language Group

1. INTRODUCTION

The KADUGLI language group (here spelled with capital letters to distinguish it from the language and the town, and the same convention is applied to the (other) Kordofanian language groups) consists of a number of closely related languages and dialects spoken in the hill villages along the southern edge of the Nuba mountains. Stevenson (1956-57) identifies nine languages (names are villages), and he divided them into three branches:

Western:	1. Tulishi, Kamdang
	2. Keiga
	3. Kanga
Central:	4. Miri
	5. Kadugli
	6. Katcha, Tuna
	7. Tumma
Eastern:	8. Krongo (Tabanya)
	9. Tumtum, Talasa

In this paper, all tone-marked Kordofanian data are taken from my own field notes, and the reconstructions for the various branches of Kordofanian are also mine.

2. RESEARCH HISTORY

In the very first volume of the *Zeitschrift für Kolonialsprachen* issued in 1910/11 an article appeared by Brenda Z. Seligman on the languages of Southern Kordofan. It contained some eighty words of Tumtum and is the first publication of data from a KADUGLI language. Soon after, Carl Meinhof published more data collected partly by himself together with August Klingenheben and partly by police inspector Nicholls of El Obeid. The first proper survey was carried out by the missionary couple MacDiarmid; their report as published in *Sudan Notes and Records* (1931) contained a small portion only of their materials. The latest and most complete coverage is found in Roland C. Stevenson's survey published in

Afrika und Übersee (1956-57).

The relative linguistic isolation of KADUGLI was already apparent in Seligman's material, as was remarked upon by Bork (1912/13). Meinhof's classification of the Nuba Mountain languages into prefix languages and Sudanic languages is not very helpful in today's perspective. However, he did point out the lexical resemblances between Tumtum, Miri, Kadugli, Krongo, and Keiga, though he classified Tumtum as a prefix language and the others as Sudanic. The MacDiarmids stressed the internal unity of the group without speculating about external relationships. Stevenson's position is more complex. On the one hand he isolates KADUGLI from the other two sets of languages spoken exclusively in the Nuba mountains which are the "bantoid" class languages (i.e. the HEIBAN, TADOLI, and RASHAD language groups) and the classless languages (i.e. the NYIMANG, TEMEIN, and KATLA language groups). On the other hand, in his chapter on the noun-class system Stevenson equates specific noun classes of HEIBAN, TALODI, and RASHAD with the so-called noun classes of KADUGLI; whereas the equations between HEIBAN, TALODI, and RASHAD are based on sound *and* meaning resemblances, the KADUGLI comparisons are added on the basis of meaning only. ("Meaning", here, refers to the vague semantic contents of the classes.) Stevenson does not commit himself to any historical interpretation of his comparisons.

The only serious external classification of KADUGLI comes from Joseph H. Greenberg. In 1950, he posited a Kordofanian language family consisting of five coordinate branches:

1. HEIBAN ("Kawalib")
2. RASHAD ("Tagele")
3. TALODI
4. KADUGLI ("Tumtum")
5. KATLA

Greenberg states that the genetic relationship between these five language groups has been deduced from "a fair measure of fundamental vocabulary resemblance" as well as from 'considerable resemblance among the groups in personal pronouns and in the paired noun class prefixes" (p. 390). As for KADUGLI, three examples are given for these resemblances:

	2nd person	noun class	noun class
HEIBAN	ŋa	-	-
RASHAD	ŋo	f/y	-
TALODI	ŋo	b/y	-/k

	2nd person	noun class	noun class
KADUGLI	oo	b/y	-/k
KATLA	-	b/-	-

In his revised classification of African languages (1963, 1966), Greenberg added considerably more evidence for his Kordofanian language family, but he also concludes that KADUGLI "shows considerable divergence from the remainder" (p. 148). Below I shall examine the validity of his evidence for including KADUGLI in Kordofanian.

3. THE LEXICAL EVIDENCE

This section is a critical evaluation of the place of Kadugli in Greenberg's "Niger-Kordofanian Comparative Word List" (1966:153-160). The aim of this wordlist is two-fold: (1) to prove a genetic relationship between the various branches of Kordofanian, and (2) to prove genetic relation between Kordofanian and Niger-Congo. Before examining specific suggested cognates I would like to comment on a particular misuse of "mass comparison".

It is true (as is stated e.g. in Greenberg 1966:3) that the number of chance resemblances becomes infinitesimal when an increasing number of languages is compared. The formula is: c^{n-1}, i.e. the probability of finding sound-meaning chance resemblances between a set of n languages is equal to the chance c for a single language raised to the (n-1)th power. What is often forgotten is that this formula applies only when a fixed, predetermined set of languages is used, and when these languages are all genetically equidistant or unrelated. The latter constraint is necessary in order to eliminate the effect of chance resemblances (and borrowings) between proto-languages. The necessity of the former constraint can best be illustrated with an example (item nr. 23 'large' in the above-mentioned list):

KADUGLI:	Tumtum	fifi (plural stem)		
Kordofanian:				
HEIBAN:	Heiban	ipa		
TALODI:	Liri	o:pi		
Niger-Congo:				
Atlantic:	Dyola	faf	Limba	boi
Mande:	Vai	ba	Kpelle	bayi
Gur:	Dagomba	bi	Senufo	pei

Kwa:	Santrokofi	opẽ	Proto-Ijo	*opu
Adamawa-Ubangi:	Juman	ɓo	Kam	boli

The fact that the entries in this list come from carefully selected languages has considerably increased the chance of finding resemblances. For KADUGLI, a choice could be made between eight unrelated roots:

1. Kamdang	-ikki/kaɗurú	(1, 2)
2. Keiga	ablúŋɔ́	(3)
3. Kufa	aaɓukkɛ́/gʊ́ʊ́gʊ́ˀŋɛ	(4, 5)
4. Miri	adaḅḅʊ	(6)
5. Kadugli	aadaḅḅɔ	(6)
6. Tuna	aʈáɓ̣ɓ̣u	(6)
7. Tumma	máábukwá	(4)
8. Krongo	íiji/ŋgíifi	(7, 8)
9. Talasa	íígi/kíífi	(7, 8)

The (other) branches of Kordofanian offer a similar opportunity to choose:

HEIBAN:	7 roots
RASHAD:	1 root
TALODI:	5 roots
KATLA:	2 roots

Within each branch of Niger-Congo, the choice is probably even wider. Thus, without entering any probability calculations it can safely be assumed that this kind of hunting resemblances has almost no chance of failing. It is therefore no suitable instrument for proving genetic relationship. (In any particular case, however, it is still possible that the uncovered resemblances are due to commom origin, and indeed Westermann did reconstruct a Sudanic root *bà 'big' - and also two homophonous roots maning 'mat' and 'two', two roots *bá meaning 'large lizard' and 'father', and the tonally unmarked roots *ba meaning 'something, someone', 'to be somewhere', 'they', 'barn', and 'salt'.)

Greenberg lists twelve possible cognates between KADUGLI and (the rest of) Kordofanian. Four of these look convincing:

'rope'	*rug	PH	*-ar
		PT	*-aarug
		Katla	g-árág
'tail'	*iid̪i	PT	*-id̪ig

'tooth'	*-ini		PH	*-ŋad̺ ?
			PR	*-ɲin
			PT	*-iɲi
'vein'	Tuleshi	**b-ar**	H: Heiban	**d-iri**
	Katcha	**b-arεrε**	R: Tagoi	**ka-ri**
	Krongo	**b-ari**		

Special mention is made by Greenberg (1966:152-3) of the similarity between the words for 'rope' and 'root/vein'. He suggests that the former is derived form the latter by a suffix **-k**, and he cites some Niger-Congo parallels.

The next four comparisons are less convincing; they depend on high probability similarities or on low probability sound correspondences.

'belly'	***aad̺i**	PH	***-aare**
		PT	***-arag**

At first sight this looks a good possible cognate, but a correspondence **d : r** is unlikely between languages having similar consonant systems including dental as well as several alveolar phonemes (cf. **r : r** in 'rope', 'vein' and **d̺ : d̺** in 'tail').

'large' (see above)

'mouth'	***niino**	PH	***-uuɲu**
		PT	***-oŋ**
		Katla **ŋέεŋ**; Tima **k-íɲε**?	

These items have only a nasal in common.

'white'	Krongo **ofiro**	PWCH	***-biid̺o**
		R: Gom	**abɔ́rέ**
		PT	***-ibbug**
		Katla	**apfók**

These items have only a labial in common.

The last four items I find rather dubious; there seems to be hardly any resemblance at all.

'mouse'	Krongo **ni-fa**	T: Liri	**powi**
	Karondi **ni-fi**	Lafofa	**poi**

The initial **p** in the TALODI languages is a noun class prefix.

'speak' Miri t-oma H: Heiban jaŋa
Krongo ajama T: Masakin sɛmɔ
The KADUGLI forms are probably derived from *eema.

'steal' Krongo moŋ̪ŋ̪i R: Tumale dyi-mroŋ 'thief'
T: Masakin ca-mali 'thief'

'tortoise' Keiga koŋ T: Masakin k-ərə

Likewise, there seems to be no reason to equate KADUGLI *ˀoˀo 'you (sg.)' with HEIBAN *ŋa, RASHAD, TALODI *ŋo, and KATLA/TIMA *ŋaŋ.

Greenberg's list contains nineteen comparisons between KADUGLI and Niger-Congo (including the twelve items above). Of these I shall consider only those for which it has been assumed independently that they can be traced back to "Sudanic" (Westermann 1927), "Niger-Congo" (Greenberg 1966:13-24), or "Western Nigritic" (Mukarovsky 1976-77). Thus, for reasons stated above I shall not consider the suggested etymologies for 'belly', 'mouse', 'rope', 'speak', 'steal', 'tail', 'tortoise', and 'urine'.

'cut' KADUGLI *d̪eg
Kordofanian: -
S *tè (+ Nasal); NC; WN *tin (ten)

'head' KADUGLI *ɣɣd̪u
Kordofanian: -
S *-ti; WN *-túi

'know' Kadugli (Western K. only): Krongo ɔni
Kordofanian: -
S *ní-, nía- (+ Nasal)

'large' KADUGLI (Western K. only): Tumtum fifi (plural stem)
Kordofanian: H: Heiban ipa; T: Liri o:pi
S *-bà-

'mouth' KADUGLI *niino
Kordofanian: PH *-uɰnu; PT *-oŋ;
K: Katla ŋέɛŋ, Tima k-íɲɛˀ
S *-nu, -nua (-ni, -nia); NC; WN *-níana, -níuna (-núa)

'oil' KADUGLI *ooɓa
Kordofanian: -
S *-kú, -kúá-; WN *-kwúa (-kwút-)

'skin' KADUGLI ***d̥o** (Krongo **koṭo** 'bark')
Kordofanian: -
NC: At: Gola **koro**; Ma: Mende **kɔlɔ**;
Kw: Idoma **ɔkpa**; BC: Bute **kwa**;
AU: Gbanziri **koto**

'tooth' KADUGLI ***ini**
Kordofanian: PH ***-ŋad̥**; PR ***-ɲin**; PT ***-iɲi**
S ***-ní, -nín-**; NC; WN ***-nín-** (**-nighin-**)

'vein/root' KADUGLI ***-arre**
Kordofanian: H: Heiban **ḍ-iri** 'vein';
R: Tagoi **ka-ri** 'vein'
S ***-li-**; WN ***-líl-** (**-líul-**) 'root'

'white' KADUGLI: Krongo **ofiro**
Kordofanian: R: Gom **abɔ́rɛ́**; PT ***-ibbug**;
K/T: Katla **apfók**
S ***pù-**; NC (some reflexes show **r/l** as a second consonant)

'wish' KADUGLI: Krongo **tuna** 'to seek'
Kordofanian: -
S ***túná**; NC

An inspection of these eleven comparisons leaves us with seven good resemblances, i.e. 'head', 'know', 'mouth', 'oil', 'tooth', 'vein/root', and 'white'. Four of these, i.e. 'mouth', 'tooth', 'vein/root', and 'white' include comparisons with (other) Kordofanian languages.

However, a case of equal strength can be made for the inclusion of KADUGLI within Nilo-Saharan. I shall demonstrate this by comparing KADUGLI items to Greenberg's suggested sets of cognates for Nilo-Saharan (1966:133-148), Chari-Nile (1966:117-127), and Eastern Sudanic (1966:95-108). As for KADUGLI, I shall restrict myself to items that are reconstructable for Proto-Kadugli, but I shall list examples from the real languages which are as similar as possible in shape to the proto-language items.

'ashes' 4 (= Miri, v.s.) **fúɗɔ**
NS/CN/ES, e.g. Nubian **obur(ti)**

'day(light) 5 **uuru**
NS/CN/ES 'sun', e.g. Moru **ud'u**

'drink'	2 wɛ́ NS, e.g. Fur aba
'fall'	8 aɗíŋgɔ NS/CN/ES, e.g. Kunama dunga
'fire'	6 issi NS/CN/ES, e.g. Meidob ussi
'give'	9 ná NS, e.g. Didinga ɲya
'green'	7 agíírí NS, e.g. Zaghawa girri
'left'	9 gúúlɛ NS, e.g. Bagirmi geli
'man'	6 m-iid͓e CN/ES, e.g. Berta ide
'moon'	9 t͓árɛ̂ CN/ES, e.g. Kunama tera
'name'	2 ɛrɛ NS/CN/ES, e.g. Nubian eri
'person'	kɔ́ NS/CN/ES, e.g. Kanuri kwa
'two'	3 ɛ́ɛ́rá NS/CN/ES, e.g. Madi eri
'white'	9 afíírá NS/ES, e.g. Runga farr

If we allow for shortening and lenghtening many more items may be compared.

'back'	4 ɗugaarɛ NS/CN/ES, e.g. Luo agur
'blood'	4 ariid͓u NS/CN/ES, e.g. Madi (k)ari
'brother'	5 rɛ́ NS, e.g. Songhai bere

'fear'	4 ariɓá NS/CN/EG, e.g. Kanuri ri
'dance'	3 -ɓálá NS/CN, e.g. Koma ba
'rope'	2 t͓-árík NS/CN, e.g. Berta tsera
'tongue'	3 ŋ-ɔɗɔ NS/CN/ES, e.g. Mamvu kedru, Kunama ŋe:la:
'tooth'	1 t͓íŋ-íni ES, e.g. Nubian nid
'water'	2 ɓiid͓i CN/ES, e.g. Luo pi

No definite conclusion emerges from an inspection of the lexical evidence, except that KADUGLI is one of those numerous linguistic groupings in the Sahel region that appear to be relatively isolated.

4. THE GRAMMATICAL EVIDENCE

In this section I shall discuss the question whether the various ways in which number is marked in KADUGLI nouns can be regarded as a reflex of the Niger-Kordofanian noun class system. Greenberg (1966:150) lists the following similarities (his numbers):

	KADUGLI	HEIBAN	RASHAD	TALODI	KATLA
1.	b-/y-	-	f-/y-	b-/y-	b-/Ø
2.	t-/n-	-	t-/ŋ-	t-/n-	-
6.	Ø/gi-	-	-	w-/k-	-
8.	s-/any-	t-/ny-	c-/ny-	j-/ny-	-
13.	t-/k-	ð-/g-	-	t-/k-	-

As for the noun class systems found in HEIBAN, RASHAD, and TALODI, they are certainly cognate with each other (and with Niger-Congo). The KATLA system has been reduced to the point where it becomes difficult to use it for the reconstruction of Proto-Kordofanian. However, the similarities as they are listed above - excluding, for the moment, KADUGLI - are only partly cognates, and do not comprise the best established Kordofanian (and Niger-Kordofanian) correspondences.

ad (1):

The TALODI gender *b-/y- is cognate with RASHAD *w-/y- and - at least in the singular - with HEIBAN *gu-/li- (cf. no. 5 in Greenberg's list). This is the "personal" gender but contains some other nouns besides human beings. KATLA b-/Ø is attested only in Kalak, and only for the items bi/i 'cow' and bwan/wan 'sheep'. These words belong to gender *w-/g- in TALODI (cf. no. 6), and to the "labial" gender in RASHAD, cf. Orig f-aráŋ/y-aráŋ 'cow', Goy ḿ-bət/yí-bət 'goat'. It is not clear to me at present what the historical connection between these items (domestic animals) might be.

ad (2):

I am also uncertain about the relationship between the singular classes t- in RASHAD and t̪-, t- in TALODI. The plural classes are not cognate; RASHAD *ŋ- corresponds to TALODI *m-.

ad(6):

Three items can be reconstructed for the TALODI gender *w-/g-, i.e. 'cow', 'goat', and 'meat'. The correspondences of this gender in the other branches of Kordofanian are not known.

ad (8):

The RASHAD gender *j-/ɲ- is probably cognate with TALODI *ts-/ɲ- and with the plural of HEIBAN *ŋ-/ɲ-. One language ("Koalib") in the latter group has a gender t-/ɲ- instead. There is some evidence that this gender serves inter alia for deriving diminutives in all three language groups.

ad (13):

I have no evidence of a gender ð-/Ø- with concord ð-/g- in Tiro or in any other language of the HEIBAN group. As for TALODI, the Tegem ("Lafofa") gender t-/k- (t̪-/k- ?) appears to be cognate with gender *j-/g-. (Also, the "Masakin" items 'belly', 'eye', 'neck', and 'tooth' that were described by Stevenson (1956-57) as belonging to a gender ð-/k- I have all recorded with the prefixes ts-/k- < *j-/g-.)

As for KADUGLI, there are a number of reasons to doubt whether certain number-distinguishing prefixes are indeed cognate with (Niger-)Kordofanian noun classes.

In the NK system, a noun consists of a stem preceded by a class prefix, and there are a number of prefix pairs (genders) of which one member indicates Singular and the other one Plural, such that number distinctions are signalled by prefix alternations. In KADUGLI, there are some nouns that conform to this description, but these are only one of three types. The other two types occur basically without any prefix, and either the singular or the plural is derived by the addition of a prefix (examples from Krongo/Tabanya):

	SINGULATIVE	INHERENT SINGULAR OR INHERENT PLURAL	PLURITIVE
'stone'	m-isi	-	k-isi
'egg'	t͓u-suli	suli	-
'river'	-	re	na-re

It might be suggested that all prefix-less forms are really forms with zero prefixes; such things are not uncommon in real noun-class languages. However, such an analysis appears to be strained in the case of KADUGLI, especially since systems as the one sketched above have numerous parallels in Nilo-Saharan, for instance in Nilotic.

In the NK system, there is noun-class agreement; this is absent in KADUGLI. It is true that many NK languages have lost this agreement, or even both agreement and noun class prefixes. But the situation in KADUGLI is not at all similar to those broken-down noun class systems because in KADUGLI there does exist an elaborate but altogether different system of agreement. This system is based on sex/gender and on number and there is no relation with the number-distinguishing prefixes. The data on agreement are scanty, but from present research on Krongo[1] the following picture emerges:

Four forms of concord have to be distinguished: masculine, feminine, neuter, and plural. These labels are justified by the fact that male and female beings demand the masculine and feminine concord, respectively, in the singular, and that all derived plurals demand the plural concord. As for other nouns, derived singulars seem to occur in all non-plural genders, and the underived forms may belong to any of the four genders. (There are other complications which I shall not discuss here.)

In nouns, the commonest number-indicating affixes are the prefixes t͓V- for the singulative and kV- and nV- as well as the suffix -ni for the pluritive. This accounts for three of the five genders listed above.

ad (2):

There is no simple alternation t͓V-/nV- (not t-/n-!), but there are some prefix-less collectives from which both a singulative (prefix t͓V-) and a pluritive (prefix nV-) may be derived, e.g. "Katcha" (from Stevenson 1957:127):

t̪ɪ-mɪd̪ena/mɪd̪ena/na-mɪd̪ena 'red millet'. More commonly, one finds the alternations t̪V-/Ø and Ø/nV- (examples from Krongo):

t̪i-mɛd̪ijí/mɛd̪ijí	'star'
cɔɔɗɔ/ní-jɔɔɗɔ	'tongue'

ad (6):

The prefix kV- is used in the Western and Central branches to derive plurals from inherent singulars (example from "Kamdang"):

hiiní/ki-hííni	'road'

In the Eastern-branch languages, in such words kV- is either replaced (?) or preceded by nV- (examples from Krongo):

fúúni/naa-fúúni	'road'
tofi/ni-go-dofi	'cock'

ad (13):

Commonly, nouns referring to male persons are marked by the prefixes t̪a-/ka-. Many of these are agentive nouns derived from verbs. In the singular, corresponding feminines can be derived by pre-prefixing ma- (examples from "Kamdang"):

t̪a-gúsi/ka-gúsi	'(male) thief'
ma-d̪a-gúsi/ka-gúsi	'(female) thief'
cf. uusi	'steal!'

I can see no way of linking the KADUGLI prefixes t̪V-, kV-, and nV- to the Kordofanian noun classes - neither as a system nor in the specific way that has been suggested. On the other hand, these affixes have long been recognized by Greenberg himself as outstanding characteristics of Eastern Sudanic, Chari-Nile, and Nilo-Saharan (1966:113-116, 131-132):

23. Abstract and singular suffix in t.
25. Plurals in k.
27. Plurals in n.

(See also items 32, 33, 35, and 36 in the same list.)

The speciality of KADUGLI lies in the use of these affixes as prefixes rather than as suffixes. Note, however, that Fur has also prefix alternations Singular d-/Plural k-, and KADUGLI also has a plural suffix -ni, e.g. Krongo t̪o/o-d̪o-ni 'skin'. And, of course, NC noun class markers too occur both as prefixes and as suffixes.

No Nilo-Saharan parallels are readily available for the KADUGLI prefix alternations b-/Ø (not b-/y-) and s-/aŋy- listed above (nos. 1 and 8). To these we might add a few more, notably m-/k-, b-/k-, and n-/Ø. With one exception, all these prefix alternations can be assumed to be ancient within Kadugi: first, because they occur with basic nouns, and second, because they are often preceded by the more productive prefixes discussed above (examples from "Tumma"):

ɓ-ɔŋgɔrɔ/nɔ-g-ɔŋgɔrɔ	'nose'
m-iʃi/k-iʃi ∿ náá-g-íʃi	'stone'
n-dáárú/táárú	'leaf'
t̺i-n-ííd̺ú/ííd̺ú	'horn'

The exception concerns the alternation s-/aŋy-, for which the only examples (see Stevenson 1957:136) are 'broom', 'knife', and various types of pots and baskets. Also, I have no examples of these prefixes preceded by others.

These latter types of prefix alternations are typologically much more similar to the (Niger-)Kordofanian noun classes than the t̺V-, kV-, and nV- prefixes discussed earlier. However, while the number of lexical cognates that have been established between the various branches of Kordofanian (excl. KADUGLI) is so far admittedly small, there are many striking resemblances in form and meaning of the paired noun classes of these languages. (The meaning of a noun class is defined occasionally as a semantic feature, e.g. [human], [liquid], but more often simply as the set of meanings of some basic nouns frequently occurring in it.) These similarities do not extend to KADUGLI.

The word for 'pig' cited by Greenberg (1966:152) as representing a NK noun class for large animals is no convincing counter-example. It is as far as I can see the only large animal in KADUGLI with b-/k-prefix alternation, and similar words are found in many languages outside NK. Compare the following items (outside the Nuba Mountains, the meaning is always given as 'wild pig' or 'warthog'):

"Kamdang"	ɓ-ád̺ʊrʊk/k-ád̺ʊrʊk
Talodi	p-ʊd̺ʊrru/k-ɪd̺ʊrru
Orig	k-adirú/s-adirú
Sudan-Arabic	kadru:k
"Gule"	kuturu
Mahas Nubian	kaderok
Kreish	bɔɖɔ̣́
Ciita	gutar

Ik	borok
Didinga	kiborok
Teso	eputir
Markweta	pútyêʀ

5. CONCLUSION

An investigation of the more readily available lexical and grammatical evidence has led me to conclude that it is presently not possible to assume a genetic relationship between KADUGLI and (Niger-)Kordofanian. In particular, the noun-class system that has played such a prominent and convincing role in the constitution of the Niger-Kordofanian language family is absent in KADUGLI, and its absence cannot easily be explained as a loss. There are a few superficial similarities with Niger-Kordofanian noun classes, but these do not appear to be traces of it.

In a cursory way, I have followed up the suspicion that KADUGLI might belong to the Afroasiatic language family. Except for item *t̪are 'moon' which seems to be a root widespread in both Afroasiatic and Nilo-Saharan, this has brought to light no striking lexical similarities. Similarities can be found in the gender system but the differences are much greater, in particular, the AA markers k/t/n for masculine/feminine/plural are totally dissimilar to the markers found in KADUGLI, e.g. Krongo ŋ/m/n/ŋg for masculine/feminine/neuter/plural, respectively.

On the other hand, the lexical and grammatical similarities linking KADUGLI with Nilo-Saharan are in no way inferior to those that have been adduced for a number of other language groups. It is for these reasons that I recommend that KADUGLI may be included in the search for substantial Nilo-Saharan comparisons.

NOTE

1. This is carried out by Mechthild Reh, University of Cologne. I have profitably discussed this section with her, and I wish to thank her for her comments. We do not agree on all points of interpretation, and I have to take responsibility for the conclusions as presented here.

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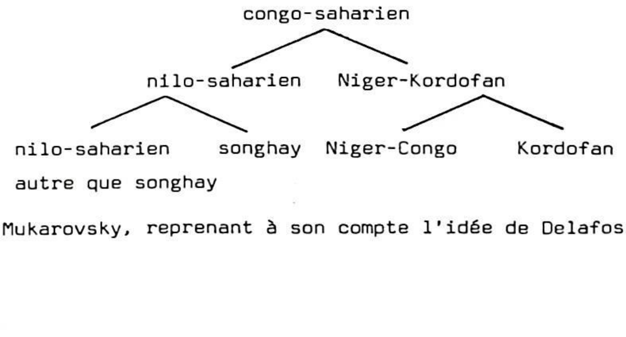
Denis Creissels

De la possibilité de rapprochements entre le songhay et les langues Niger-Congo (en particulier mandé)

1. INTRODUCTION

Parmi les nombreux problèmes que pose l'établissement d'une classification génétique des langues africaines au niveau le plus général, le problème de la place du songhay est un des plus délicats. Delafosse considérait le songhay comme une langue mandé, s'appuyant sur des affinités typologiques frappantes ainsi que sur des ressemblances non négligeables dans le vocabulaire. Westermann a semble-t-il hésité à considérer le songhay comme une langue isolée ou à l'inclure parmi les langues gur, tout en signalant des rapprochements possibles avec les langues sahariennes, en particulier le kanuri. On a pu croire le problème réglé avec l'inclusion du songhay dans la famille nilo-saharienne proposée par Greenberg (LOA). Toutefois on doit reconnaître que ce rattachement du songhay au nilo-saharien s'appuie sur un nombre somme toute modeste de rapprochements, souvent d'ailleurs fort peu convaincants. Je ne développerai pas plus ce point ici, car Lacroix dans sa communication au Congrès de la SLAO (Abidjan, 1968) a bien montré à quel point sont hasardeux bien des rapprochements proposées par Greenberg à l'appui de sa thèse. En l'absence de données plus convaincantes, on ne saurait considérer le rattachement du songhay au nilo-saharien autrement que comme une hypothèse de travail. D'ailleurs à date plus récente, deux études au moins ont remis en question sur ce point la classification de Greenberg:

- Gregersen a proposé de réunir les deux familles nilo-saharienne et Niger-Kordofan de Greenberg en une famille qu'il appelle "congo-saharienne" qui serait structurée selon le schéma suivant:



- Quant à Mukarovsky, reprenant à son compte l'idée de Delafosse qui incluait le songhay parmi les langues mandé, il propose de reconnaître songhay et mandé comme les deux branches d'une famille qu'il appelle "ouest-sahélienne", et qui selon lui aurait plus d'affinités avec les langues hamito-sémitiques qu'avec les autres langues négro-africaines.

On l'a déjà dit, l'existence de rapprochements possibles entre songhay et mandé est connue depuis longtemps. Or, si Greenberg inclut songhay et mandé dans deux familles disjointes, il est curieux de noter que:
- d'après l'étude de Gregersen (v. ci-dessus), le songhay correspondrait à la divergence la plus ancienne à l'intérieur du stock nilo-saharien;
- d'après Welmers, les langues mandé constitueraient la divergence la plus ancienne relativement au stock Niger-Congo, peut-être même Niger-Kordofan. Il n'en est que plus intéressant de constater la possibilité de rapprochements entre songhay et mandé, qui par ailleurs semblent bien avoir, chacun de son côté, un rapport plutôt lointain avec le reste des deux familles dans lesquelles les a rangés Greenberg.

Mon intention ici n'est pas de proposer telle ou telle solution à ce problème, mais simplement de montrer qu'un examen objectif des rapprochements possibles entre songhay et mandé doit conduire à envisager une remise en question du classement de Greenberg. Dans quel sens conviendrait-il de réviser ce classement, il me parait par contre beaucoup trop tôt pour pouvoir apporter une réponse valable à cette question. S'il me semble néanmoins utile de faire ici le point sur la question, c'est que depuis une vingtaine d'années la documentation s'est considérablement élargie tant du côté songhay que du côté mandé; ceci permet à l'heure actuelle de proposer un ensemble de rapprochements possibles relativement consistant, très largement supérieur en tout cas, tant par le nombre que par la vraisemblance de ces rapprochements, aux rapprochements proposées par Greenberg entre le songhay et les autres groupes de langues de la famille nilo-saharienne.

2. LES RAPPROCHEMENTS ENTRE SONGHAY ET MANDÉ

Les affinités entre mandé et songhay se situent à la fois sur le plan des isomorphismes typologiques et sur le plan des ressemblances entre signifiants renvoyant à des signifiés identiques ou voisins. Je laisserai ici de côté les affinités typologiques, comme non pertinentes par elles-mêmes pour la reconstruction d'une parenté génétique. Je rappellerai simplement pour mémoire
- tout d'abord que l'unité de l'ensemble mandé apparait à première vue beaucoup plus évidente au niveau typologique qu'au niveau lexical,

- ensuite que du point de vue typologique l'ensemble mandé tranche nettement sur le reste du Niger-Congo, et que de son côté le songhay aussi semble typologiquement assez différent du reste du nilo-saharien,
- enfin que l'affinité typologique entre songhay et mandé est considérable.

Mukarovsky et Nicolaï ont dans deux articles récents développé ce dernier point, qu'il est inutile de reprendre plus ici. Nous allons donc nous restreindre à un recensement de ressemblances entre signifiants renvoyant à des signifiés identiques ou voisins. Beaucoup de ces ressemblances ont déjà été notées dans diverses études sur la question, certaines le sont ici vraisemblablement pour la première fois.

2.1 LES PRONOMS PERSONNELS

Les formes des pronoms personnels permettent les deux rapprochements suivants:

'lui, elle'

songhay: a (D&Ch à)
mandé: manding à, soso a, soninké a, sembla à, etc.

'eux, elles'

songhay: i (D&Ch ì)
mandé: mandinka ì, soso e, soninké i, sembla ì/è.

Les autres personnes ne se prêtent pas de manière évidente à des rapprochements. A propos du à de troisième personne du singulier, on notera qu'un pronom sujet de troisième personne ayant la forme à est largement attesté, non seulement dans la plupart des langues mandé, mais aussi dans un grand nombre de langues appartenant aux diverses branches de la famille Niger-Congo; la forme phonétiquement voisine ɔ est elle aussi très commune dans les langues Niger-Congo.

2.2 LES DÉMONSTRATIFS

Le démonstratif songhay wo 'ceci, celui-ci' (D&Ch wó, Tersis wθ) peut être rapproché du démonstratif manding ò, wò 'cela, celui-là'. C'est vraisemblablement à l'agglutination de ces démonstratifs qu'est dûe la ressemblance formelle entre le suffixe du défini en songhay (-ǒ) et en mandinka (-ò).

Le songhay no 'là-bas' peut être rapproché du soninké no 'là', du mendé ná 'cela, celui-là' et nà 'là', du soso ná 'là, celui-là'. A la différence du précédent, ce rapprochement intéresse non seulement le mandé, mais aussi d'autres branches de la famille Niger-Congo, où des formes n + voyelle sont communes avec une valeur démonstrative. Par exemple en temné on a nɔ 'ici'; dans les langues kru "le démonstratif a la forme nV, la voyelle étant déterminée par la classe du nom modifié" (L. Marchese, *Atlas linguistique kru*, ILA, Abidjan, 1979). Citons aussi la reconstruction de Guthrie ***nɔ** 'this', ainsi que la reconstruction de Westermann (WSS) ***ɲa** 'dies'.

2.3 LES MORPHÈMES DE LA CONJUGAISON

L'accompli transitif est marqué en songhay (du moins dans les dialectes qui ont l'ordre SOV) par un morphème prédicatif **na**:

a na ham dey /lui/préd./viande/acheter/ 'il a acheté de la viande'

Un morphème **na** ou **nɔ** de valeur identique est attesté dans quelques parlers manding (région d'Odienné et du Wassoulou).

L'accompli négatif a pour marque en songhay **mana**:

a mana ham dey 'il n'a pas acheté de viande'

et ce morphème peut être rapproché de morphèmes de même valeur en manding (**má** ou **máŋ** selon les dialectes, par exemple mandinka: à máŋ sùboo sàŋ /lui/préd./viande/acheter/ 'il n'a pas acheté de viande') et en soninke (**ma**, par exemple: **a ma maro n yiga** 'il n'a pas mangé de riz'). Un rapprochement ultérieur est possible avec des morphèmes de signifié négatif ayant la forme **ma** ou **mã** (ou une forme phonétiquement voisine) attestés dans des langues Niger-Congo non mandé: par exemple baoulé **-mã**, ewe **me-**.

On a encore en songhay une marque de conjugaison **ma**, que Prost désigne comme marque du "subjonctif", et qui se prête à un rapprochement avec un morphème de conjugaison du manding: **máa** ou **mána** à valeur d'optatif (ce morphème apparait exclusivement dans les formules de souhait); par exemple:

songhay: **a ma ham dey** 'qu'il achète de la viande'
bambara: **ála máa ã́ tlẽ̀na hɛ́rɛ lá** 'que Dieu nous fasse passer la journée en paix'

Pour ce qui est de la marque de conjugaison à valeur d'inaccompli, on est en fait ramené au problème de la prédication situative ('être' locatif), qui va être examiné maintenant.

2.4 LES MARQUES PRÉDICATIVES DE LA SITUATION ('ÊTRE' LOCATIF) ET DE L'IDENTIFICATION ('ÊTRE' ÉQUATIF)

Pour le situatif, le songhay a deux prédicatifs (ou verbes défectifs?) **go** et **bara**, le premier étant vraisemblablement à rapprocher du morphème de conjugaison **ga** à valeur d'inaccompli (d'ailleurs certains dialectes ont **go** avec les deux valeurs).

Le situatif **go/ga** se prête à un rapprochement avec un monème de valeur analogue en kpelle (**ká**) ainsi qu'en loma (**γa**). Un rapprochement ultérieur est possible avec baoulé (kwa) **ka** 'rester', ainsi que de manière plus générale avec l'entrée 27 ('to remain') de la liste comparative Niger-Kordofan de Greenberg.

Le situatif **bara** peut être rapproché du manding **bɛ́**, du kpelle **ba**, etc., ainsi que plus généralement des formes citées par Greenberg à l'entrée 2 ('to be (1)') de sa liste comparative Niger-Congo.

L'équatif du songhay **ti** peut être rapproché du bisa **ti** 'être', du manding **de/le** 'c'est' (selon les parlers, prédicatif nominal ou particule de focalisation), en dehors de la famille mandé un rapprochement est possible avec baoulé **ti** 'être' et de manière plus générale avec l'entrée 3 (to be (2)') de la liste comparative Niger-Congo de Greenberg.

2.5 LE MORPHÈME VERBAL DE SYNDÈSE *kà*

Le songhay connait un morphème **ka** (D&Ch **kà**) identifié par Prost comme une "conjonction", qui apparait dans des constructions telles que:

> **a koy yobo ra ka ham dey** 'il est allé au marché acheter de la viande'
> /il/est allé/marché/à/et/viande/a acheté /

construction qui correspond terme à terme à une construction manding qui fait appel aussi à un morphème de syndèse **kà**:

> **à táara súgu lá kà sògo sà̃** même décomposition mot à mot, même sens

Un rapprochement est possible avec une conjonction **ka** du temne (ouest-atlantique):

> **akənc kə debɔysa ka kə boya** 'le bois est devenu humide et a gonflé'
> /le bois/il/est devenu humide/et/il/a gonflé/

ainsi qu'avec le morphème de conjugaison **ka** du swahili, à valeur de consécutif:

> **ni-li-kwenda soko-ni ni-ka-nunua ndizi** 'je suis allé au marché et j'ai acheté des bananes'

2.6 LES MORPHÈMES DÉRIVATIFS

Plusieurs des dérivatifs du songhay se prêtent à des rapprochements avec des dérivatifs de valeur analogue attestés dans les langues mandé:

-ri: 'résultat d'action et infinitif' (définition donnée par Prost)
cf. mandinka **-ri**, bambara **-li** suffixe formateur de noms de procès

-nkyè: 'suffixe humain de race ou groupe ethnique'
cf. soninké **-nke**, mandinka **-nka** 'originaire de ...'

-anta: suffixe formateur de numéraux originaux
cf. mandinka **-njaŋ**, bambara **-nã**, soninké **-ndi**, et éventuellement en dehors du mandé sereer **-ander**, wolof **-el**

-anta: suffixe de participe à valeur résultative (par exemple hay 'ouvrir' donne **hay-anta** 'ouvert')
cf. soninké **-nte**, même valeur (par exemple joppa 'commencer' donne joppa-nte 'commencé')

-endi: suffixe formateur de verbes factitifs (par exemple kaṅ 'tomber' donne **kang-endi** 'faire tomber')
cf. soninké **-ndi** mandinka **-ndi** même valeur

Le dernier de ces dérivatifs est particulièrement intéressant, dans la mesure où il se prête à un rapprochement ultérieur avec des suffixes à valeur de causatif attestés dans diverses branches de la famille Niger-Congo. Citons par exemple le sereer **-in**. Mentionnons aussi la reconstruction *ti proposée par Voeltz pour 'extension causative du proto-Niger-Congo (communication au colloque "Le verbe en Niger-Congo", CNRS Ivry, 1979). L'existence de ce suffixe en soninké et en mandinka remet en question l'opinion courante selon laquelle le mandé ne présenterait pas de trace des extensions verbales du Niger-Congo, et le fait qu'on trouve en songhay un suffixe presque identique n'en est que plus troublant.

2.7 LES POSTPOSITIONS

En songhay comme en mandé, la limite n'est pas toujours nette entre les véritables postpositions et des lexèmes nominaux employés comme relateurs. Parmi les cinq véritables postpositions que dégage Prost pour le songhay, trois se prêtent à des rapprochements avec le mandé:

ga 'sur le bord de, à', cf. mendé **ngá** ~ **yá** 'edge, on', kpelle **ŋa** 'surface, on over, above', mandinka **káŋ**, bambara **kã̀** 'sur'.

ra 'dans (un lieu ou un temps, valeur de partitif et valeurs locatives'), cf. manding **lá** (dans certains dialectes: **rá**), mendé **ndá** ~ **lá**, soso **ra**, toutes postpositions à valeur locative assez générale difficiles à gloser précisément en français; cf. aussi le suffixe soninké **-ra**, **-raxe** qui indique le lieu de l'action.

koné 'aux mains de, en la possession de, à', cf. ***ko** 'main', radical dégagé par Prost pour les langues mandé-sud; ce radical subsiste en manding dans le nom signifiant 'doigt' (mandinka **kono-ndiŋ**, bambara **kɔ-ni**, où **-ndiŋ/-ni** signifie approximativement 'le petit de ...'), et il a vraisemblablement fourni aussi (v. Prost MSMB) le chiffre cinq du bobo (**kō**); un rapprochement est aussi possible avec ***kónò** 'arm' reconstruit par Guthrie en bantu.

2.8 LE PRÉFIXE NOMINAL **N-*

Songhay aussi bien que mandé sont réputés ne présenter aucune trace de morphèmes classificateurs. Il y a toutefois dans ce domaine même une coïncidence curieuse.

En manding, une série de consonnes prénasalisées présentes à l'initiale de certains items lexicaux pose un problème à l'analyse phonologique, et, si on examine la distribution lexicale de ces prénasalisées, on s'aperçoit que la majorité des items concernés sont, soit des noms d'animaux, soit des noms d'arbres. Il est donc tentant, dans la perspective d'une reconstruction, de voir là la trace d'un (ou plusieurs) ancien(s) préfixe(s) à valeur classificatoire. Or un problème analogue est soulevé pour le songhay par Nicolaï, qui relève que les lexèmes qui (dans certains dialectes) possèdent un élément nasal initial peuvent se répartir en trois catégories dont l'une est justement constituée de noms d'animaux (ou insectes) sauvages; citons sa conclusion: "au vu d'une telle répartition on peut se demander si un élément *N-, probablement syllabique et don autonome, n'était pas lié à cette signification d'animal ou d'insecte sauvage".

Cette coïncidence entre songhay et manding ne saurait s'expliquer par l'emprunt massif d'items lexicaux isolés, car les noms d'animaux qui présentent en manding les prénasalisées initiales ne ressemblent par ailleurs absolument pas (sauf dans un nombre minime de cas) à ceux du songhay - et de manière générale, le champ sémantique des noms d'animaux ne se prête qu'à peu de rapprochements entre songhay et mandé.

Il faut signaler ici la possibilité de rapprochement avec la classe 9 du bantu, dont le préfixe est reconstruit comme *ne-, et qui regroupe typiquement des noms d'animaux.

2.9 LES LEXÈMES

J'ai pu recenser environ 200 lexèmes songhay susceptibles de rapprochements avec des langues Niger-Congo, les langues mandé se trouvant impliquées dans la quasi-totalité de ces rapprochements. Pour ce faire, j'ai utilisé tant des listes comparatives déjà publiées que des lexiques de langues particulières, sans être en mesure de procéder à une confrontation systématique du lexique songhay à celui des langues Niger-Congo. Il ne s'agit donc là vraisemblablement que de l'ébauche de ce que pourrait être une liste complète des rapprochements possibles entre songhay et Niger-Congo.

Parmi les possibilités de rapprochements observées, toutes ne sont évidemment pas d'égale valeur, aussi j'en citerai ici seulement une partie. Il est tout d'abord évident qu'une telle quantité de ressemblances ne saurait s'expliquer par le seul hasard. Pour ce qui est de la possibilité d'emprunts, il est très probable que l'emprunt explique une bonne part des ressemblances observées; toutefois, je ferai remarquer que les ressemblances concernant des secteurs de vocabulaire "suspects", c'est à dire considérés habituellement comme peu significatifs pour la reconstitution d'une parenté génétique (par exemple: termes liés à certaines activités professionnelles, noms de certaines plantes alimentaires) sont en proportion assez faible dans ma liste comparative, alors qu'on y relève un nombre considérable de termes relevant des secteurs du vocabulaire considérés comme les plus fondamentaux et les moins susceptibles de donner lieu à l'emprunt.

Notons d'abord un nombre important (19) de termes relevant du champ sémantique du corps, auxquels on pourrait d'ailleurs encore rajouter les deux suivants:

- la postposition du songhay koné 'en la possession de' a déjà été rapprochée ci-dessus de termes signifiant 'main';
- un lexème songhay dont le signifié se réduit apparemment à 'noyau' (Prost: guli, Tersis: gúrè) se prête à un rapprochement avec des lexèmes mandé signifiant 'os, noyau' (par exemple mandinka kúlu).

Voici la liste de ces 19 rapprochements possibles entre songhay et Niger-Congo intéressant le champ sémantique du corps:

'bras' (aussi: 'main', 'épaule', 'aile')

songhay: **kaba, kamba** 'main ou bras' (D&Ch **kàbè** id.)

mandé: bambara **kàmã** 'épaule, aile', vaī **kàfa** 'bras, épaule', soninké **kanpi** 'aile'

gur: mooré **kaã:ga**, pl. **ka:mse** 'bras'

kru: bété **kɔ̀pə́** 'aile, épaule'

adamawa-oubanguien: tikar **kwòep** 'aile'

cf. aussi l'entrée 31 ('shoulder') de la liste comparative Niger-Kordofan de Greenberg

'coeur' ou 'foie'

songhay: **bina** 'coeur, siège des sentiments, creux de l'estomac, estomac' (D&Ch **bìnè** 'coeur')

mandé: soso **bɔ́ñɛ́** 'coeur", bambara **bínyɛ** 'foie', soninké **butte** 'foie, courage, colère', gouro, yaouré **bili** 'foie', wẽ, mano **bulu** 'foie', dan **blu** 'foie'

ouest-atlantique: peul **ḅernde** 'coeur'

kwa: nzéma **ɛ̀bɔ̀lɛ̀** 'foie', avikam **ɛ́bwrɛ́** 'coeur', igbo **óbì** 'chest, heart'

'côté'

songhay: **kyeraw** 'côté, flanc' (D&Ch **cérów** id.)

mandé: mandinka **kára** 'côté', **kárabasa** 'flanc'

'fesses, fond' (1)

songhay: **tina** 'cul (D&Ch **túndè** 'fesse')

mandé: soninké **tiŋe** 'souche, origine, tronc, cul'

ouest-atlantique: kissi **tumdo**, pl. **tumtã** 'fesse'

gur: mooré **tẽgré** 'fond, partie inférieure de, sous, dessous'

kwa: igbo **òtìlé** 'buttock'

'fesses, fond' (2)

songhay: **nkoro** 'fesses'; **kora** 'derriere, fond, cul' (D&Ch **ŋ̀kóró** 'bassin')

mandé: mendé **ngótó** 'buttocks', mandinka **kóto**, bambara **kɔ́rɔ** 'dessous', soso **xɔ̀rɛ́** 'fond'

'front'

songhay: **tenga** 'front' (D&Ch **táŋá** id.)

mandé: bambara **tẽ́**, soninké **teŋe**, **taŋe**, soso **tigi** 'front'

ouest-atlantique: peul **tiinde** 'front'

gur: bieri **tini**, tayari **tin** etc. 'front' 'gorge'

songhay: **kormollo** 'gosier', **kotè** (Z. **kōté**) 'étrangler' (D&Ch **kárdá** 'gorge, pharynx', **kár-mólló** 'larynx', **kóotè** 'étrangler')

mandé: soninké **xore** 'gorge', boko-busa **kolo** 'gorge, gosier', sembla **gūrē** 'cou'

ouest-atlantique: peul **kondondol** 'oesophage, gorge'

gur: mooré **kodebre** 'larynx', **kōde** 'égorger'

kwa: nupe **kòrò** 'cou', baoulé **kɔ́mí** 'cou'

Benue-Congo: eloyi **kwɔ́rɔ̀** 'throat', bantu (Guthrie) ***kòdò** 'throat, gullet'

cf. aussi l'entrée 35 ('neck') de la liste comparative Niger-Congo de Greenberg

'graisse'

songhay: (D&Ch) **ñóon** 'oindre, enduire, graisser qqch, crépir'

mandé: radical ***nyon** 'graisse' dégagé par Prost pour les langues mandé-sud

autres langues Niger-Congo: cf. l'entrée 36 ('oil') de la liste comparative Niger-Congo de Greenberg, à quoi on peut rajouter une attestation dans le groupe ouest-atlantique (non représenté à cette entrée de la liste de Greenberg): wolof **niin** 'être gras, huileux'

'langue'

songhay: **déne** 'langue (D&Ch **dèenè** id.)

mandé: boko-busa **lɛ́ná**, soninké **neene**, mandinka **néŋ**, bisa **nen**, gouro **nènè**, etc. 'langue'

autres langues Niger-Congo: un rapprochement avec les formes citées à l'entrée 45 ('tongue') de la liste comparative Niger-Congo de Greenberg n'est pas à exclure - cf. par exemple en bantu la reconstruction de Guthrie ***démį̀** 'tongue'

'nez'

songhay: **nīnā** 'nez (D&Ch **nìinè** id.)

mandé: boko-busa **ní**, mandinka **núŋ** 'nez'; pour les langues mandé-sud Prost (MSMB) énumère diverses formes **nyi**, **nye**, **nyu**

'peau'

songhay: **kūru** 'peau (fraiche ou tannée), écorce, enveloppe' (D&Ch **kúurú** 'peau, cuir')

mandé: mandinka **kùlu**, jula et maninka **gbòlo**, bambara **wòlo** 'peau', soninké **xolle** 'carapace, coquille', kpelle **kɔlɔ** 'skin, hide, bark',

mendé kɔ̀lɔ́ 'skin, bark', gouro et yaouré koré 'peau, cuir', etc.
autres langues Niger-Congo: cf. l'entrée 40 ('skin') de la liste comparative Niger-Congo de Greenberg, à laquelle on peut ajouter une attestation dans les langues kru: bété ku̍, guéré kū etc. 'peau'

'pied, jambe'

songhay: **kyè** 'pied, patte' (D&Ch **cè** 'pied, jambe, gigot, trace')
mandé: sembla **kyèn** 'pied', vaī **kĕŋ** 'jambe, pied', toura et dan **gẽ** 'jambe', mandinka **sìŋ**, bambara **sẽ̀** 'jambe, pied' (N.B. la correspondance entre manding **s** et autres langues mandé **k** est régulière)

'poil'

songhay: **kāba** 'barbe' (D&Ch **kàabè** id.)
mandé: soso **xàbɛ̂** 'poil', boko-busa **kã́** 'poil', langues mandé-sud ***ka** 'poil', radical dégagé par Prost (MSMB)
ouest-atlantique: wolof **kawar** 'cheveu,poil'
gur: mooré **köbdo** 'poil, plume'

'poumon'

songhay: (D&Ch) **kúfú** 'poumon'
mandé: mandinka **kùufukaafa** 'poumon'

'salive, bave'

songhay: **yololo** 'salive' (D&Ch **yólló** 'baver, bave')
mandé: mandinka **yóoli** 'bave'
ouest-atlantique: peul **yoodoo** 'baver', **joorde** 'salive, crachat'
gur: mooré **yūda** 'baver, couler d'une manière visqueuse'

'sexe feminin'

songhay: **buti** 'vulve' (D&Ch **bùtè** id.)
mandé: mandinka **bùtu**, bisa **bid**, samo **boro**, gouro **buri** 'vulve'

'sexe masculin'

songhay: **foro** 'scrotum, bourses' (D&Ch **fòorù** id.)
mandé: mandinka **fóto**, bambara **fɔ́rɔ** 'sexe de l'homme'

'tête'

songhay: **boṅ** 'tête (D&Ch **bòŋ** id.; NicolaI donne aussi les formes dialectales suivantes: songhay occidental **bumo/bomo**, dendi **bɔ̀m**, ingelsi **bànγò**)
mandé: gban **mbọ** 'tête', mwa **bô** 'cerveau'
ouest-atlantique: krim **bùn**, wolof **bopp**, kissi **bolle**, temné **(rə-)bomp** 'tête'

Benue-Congo: Bantu (Guthrie) ***bòŋgó** 'brain'

'ventre'

songhay: **gundé** 'ventre, intérieur, grossesse' (D&Ch **gúndè** id.)
kuna 'dedans' (D&Ch **kúná** id.)
mandé: mandinka **kóno**, bambara **kɔ́nɔ**, mendé **kŏ**, soso **kŭ**, dan **gú** 'ventre'
ouest-atlantique: wolof **koll** 'ventre'
kru: grebo **kudi** 'stomach'
kwa: baoulé **kú** 'ventre', yoruba **ikùn** 'belly, mind'
Benue-Congo: bantu (Guthrie) ***kų̀ndų́**, ***gų̀ndų́** 'stomach'

On aura remarqué que, non seulement les rapprochements intéressant le champ sémantique du corps sont relativement nombreux, mais de plus une proportion particulièrement importante de ces rapprochements (plus de la moitié) s'étend aux langues Niger-Congo non mandé. Il est donc clair, étant donné à la fois le nombre de ces rapprochements et le large éventail de langues qu'ils concernent, que, même à supposer qu'une étude ultérieure conduise à en rejeter quelques-uns, certains au moins doivent être significatifs.

En dehors du champ sémantique du corps, je voudrais citer maintenant un échantillon de quelques rapprochements, parmi ceux qui me paraissent les plus intéressants tant pas la nature des signifiés que par l'éventail des langues concernées:

'aller'

songhay: **koy**, **ko** 'aller' (D&Ch **kóy** id.)
mandé: sembla **kà** (présent **kwɔ̈**) 'aller'
ouest-atlantique: temne **kɔ/kɔnɛ** 'aller', kissi **kɔ̄** 'aller'
kwa: baoulé **kɔ** 'aller', igbo **gá** 'aller'
cf. aussi la reconstruction de Westermann (WSS) ***kua** 'gehen'

'apparaître'

songhay: **bańgey** 'se montrer, apparaître' (D&Ch **báŋgéy** id.)
mandé: soninké **bange** 'apparaître, surgir, publier', bambara **bã́ge**
'naître, enfanter, accoucher'
ouest-atlantique: peul **wannga** 'paraître'
gur: dagbani **baŋ** 'get to know', mooré **bãgé** 'connaître, apprendre'
Benue-Congo: bantu (Guthrie) ***báŋg** 'to open up'

'bosse'

songhay: **guńgu** 'faire une petite saillie ronde' (D&Ch **gúŋgù** 'île,
bosse sur le terrain', Tersis **zùnkú** 'bossɛ')

mandé: mandinka **kùnku** 'faire une protubérance', soninké **jungo** 'bosse', san **gũ̀ũ** 'bosse'
ouest-atlantique: wolof **junki** 'être renflé', peul **ƴuugre** 'bosse'
kwa: baoulé **jòngú** 'bosse'

'casser'

songhay: **keyri** (Z. **kyeri**) 'casser, se casser' (D&Ch **kéyrí** 'briser, démolir, casser, rompre')
mandé: bambara **kári**, mandinka **káti** 'casser, briser, cueillir', soninké **kara** 'casser, briser, rompre, traverser'
autres langues Niger-Congo: cf. l'entrée 12 ('to break off') de la liste comparative Niger-Kordofan de Greenberg

'dire'

songhay: **tyi** 'dire' (D&Ch **cì** 'dire, informer')
mandé: soninké **ti** 'dire'
Benue-Congo: bantu (Guthrie) ***tì** 'say'

'détacher'

songhay: **fẽri** 'délier, ôter le pagne, démonter, ouvrir' (D&Ch **férí** 'délier, défaire, dénouer')
mandé: mandinka **fíriŋ** 'détacher, délivrer', san **fúrẽ** 'dénouer', bambara **fóni** 'détacher, dénouer, détendre'
ouest-atlantique: wolof **firi** 'dérouler, détendre, dénatter'
gur: mooré **vĩli** 'dérouler, enlever des bandes de pansement'

'donner'

songhay: **no** 'donner' (D&Ch **nó** id.; la forme **na** est signalée par Nicolaï en songhay septentrional)
mandé: plusieurs formes **no** ou **nu** 'donner' signalées par Prost (MSMB) pour diverses langues mandé-sud
autres langues Niger-Congo: cf. l'entrée 24 ('to give') de la liste comparative Niger-Congo de Greenberg, cf. aussi Westermann (WSS) ***na** 'geben'

'enfler'

songhay: **fũru** 'gonfler' (D&Ch **fùurù** 'se gonfler d'orgueil')
mandé: mandinka **fúunu**, bambara **fúnũ**, sembla **fùrɛ̀**, soso **fṹtú** 'enfler'
ouest-atlantique: wolof **fonki** 'enfler'
gur: mooré **fu** 'enfler, gonfler'
kru: guéré **bũ̄** 'enfler'
kwa: abbey **fúlɛ̀**, alladian **fɜ**, éotilé **fò** 'enfler'

'entrer'

songhay: hur, huru (Z. furo) 'entrer' (D&Ch húrè 'entrer, pénétrer, rentrer'; Nicolaī énumère les formes dialectales suivantes: zarma fúrò, songhay central húrà, dendi wúlò, hólò, songhay occidental hirow, hurow, tadaksahak 'hu:ru, tasawaq hɑ̂r)

mandé: mwa vula; gouro et yaouré wura 'entrer', mandinka bùla 'enfoncer, laisser, obliger'

kru: bété plá, godié pʌ̄lʌ̄ 'entrer'

kwa: abron wùra?, baoulé wlǔ, agni wɔ̀lɔ́, nzéma wɔ̀lɔ̀, alladian brɑ̂ 'entrer'; cf. aussi baoulé wlǎ 'introduire, mettre un habit'

'étendre, s'étendre'

songhay: dāru 'étendre, s'étendre'

mandé: bambara dá 'coucher, poser' mendé ndá ~ lá 'set down, lay, lay down, lie down'

kwa: baoulé da, la 'coucher, se coucher, être couché'

Benue-Congo: bantu (Guthrie) *daad 'to lie down and sleep'

cf. aussi l'entrée 41 ('to sleep') de la liste comparative Niger-Congo de Greenberg

'noir'

songhay: bi 'noir, être noir' (D&Ch bî id.)

mandé: mandinka fìŋ, bambara fĩ̀, soninké finna 'noir'

autres langues Niger-Congo: cf. l'entrée 7 ('black') de la liste comparative Niger-Congo de Greenberg

'oeuf'

songhay: guri 'oeuf' (D&Ch gùurì id.)

mandé: manding kíli, vaī et kono keri, bisa de l'est gur, bisa de l'ouest gyir, samo gyiri 'oeuf'

gur: dagaari jɛ́lɩ, kusal gɛl, mooré gyellé, etc. 'oeuf'

kru: bété gʉ́, godié gɩ̀, etc. 'oeuf'

Benue-Congo: bantu (Guthrie) *gìdí 'egg'

'percer'

songhay: fun 'percer' (D&Ch fɑ̂n 'percer, trouer, crever')

mandé: Prost donne pour 'percer' des formes põ, fõ, fwẽ, hõ dans le diverses langues mandé-sud; mandinka búŋ 'piquer, viser, tir soninké bunu 'piquer, percer, transpercer, viser au but'

gur: mooré po 'trouer, percer'

kru: grebo fȯ 'hole'

kwa: agni, baoulé et nzéma **fṹ** 'creuser'

'piler' (aussi 'écraser','marteler')

songhay: **dur** 'piler' (D&Ch **dúrú** 'piler'; Nicolaï signale

forme **dut** en songhay septentrional)

mandé: mandinka **tùu** 'piler', **túutuu** 'écraser', **tùnkaŋ** 'fo

tugo 'piler', vaī **tulu** 'to beat rice etc. in a mor

gur: ***to** 'piler', radical reconstruit par Manessy à part

tions en kurumfe et dans les langues Oti-Volta

kru: tépo, jrewe **du̍**, wobé **dū**, aīzi **dru** 'piler'

kwa: abbey **tū**, ewe **tó** 'piler'

Benue-Congo: bantu (Guthrie) ***tú** 'pound (bite)', ***tùùt**

***tụ́d** 'forge (pound)'

'porter un enfant dans le dos'

songhay: **ƀoppa, bappa** 'porter dans le dos un enfant' (

'porter dans le dos')

mandé: soso **bã̀bá**, soninké **bambu**, mandinka **bàmpu**, bamb

pombo 'porter un enfant dans le dos'

Benue-Congo: bantu (Guthrie) ***pààp** 'carry (child) on

'tortue'

songhay: **nkura** 'tortue' (Tersis **ùnkùrù** id.)

mandé: mandinka **kùtu**, soso **kùrɛ́**, boko-busa **küsĩ́** 'tor

kundine 'tortue terrestre'

gur: mooré **kuri** 'tortue'

kru: tépo, jrewe, guéré **kwla̍**, wobé **kwlá**, bété de Gu

'tortue'

Benue-Congo: efik **-kút**, bantu (Guthrie) ***kụ́dọ** 'tor

cf. aussi l'entrée 47 ('tortoise') de la liste com

Kordofan de Greenberg

'trou', 'creuser'

songhay: **botol** 'creux circulaire peu profond'

mandé: soninké **bote** 'trou', **boto** 'percer, creuser

ouest-atlantique: wolof **bëtt** [bət:] 'percer'

gur: wama **buri, buru** 'creuser'

kru: grebo **búdú**, bassa **Ɓúlú**, etc. 'creuser'

kwa: baoulé **bwɛ̂**, avikam **ɛ́bɔ̃́**, éotilé **àbɔ̀** 'trou'

'vouloir, aimer'

songhay: **bā** 'vouloir, aimer' (D&Ch **bâ** 'aimer, v être préférable'; Nicolaī reconstruit ***baga** compte tenue de formes **baga** ou **baγa** attestées dans plusieurs dialectes)

mandé: soso **wá** 'vouloir', bisa **wã**'aimer'

ouest-atlantique: wolof **bëgg** [bəg:] 'vouloir, aimer'

kru: bété de Guibéroa **wà** 'aimer' (et formes semblables attestées dans diverses autres langues kru)

A côté de tels rapprochements lexicaux songhay-mandé susceptibles de s'étendre à des langues Niger-Congo non mandé, la majorité des rapprochements que j'ai relevés concerne uniquement (du moins dans les limites de ma documentation) les langues mandé, le plus souvent d'ailleurs le soninké et/ou le manding. En voici quelques-uns à titre d'exemple:

'boue'

songhay: (D&Ch) **bòtògò**'boue, argile, marne'

mandé: bambara **bɔ̀rɔgɔ**, **bɔ̀rɔkɔ** 'boue', soninké **botoxa** 'argile, boue'

'carquois'

songhay: (D&Ch) **tóŋgó** 'carquois'

mandé: bambara **tṍ**, soninké **tugura** 'carquois'

'détester, haīr'

songhay: **konna** 'haīr (D&Ch **kónnó** 'haīr, détester')

mandé: mandinka **kóŋ** 'détester', **kónna-ntee** 'personne qui éprouve de la haine'

'épais'

songhay: **tefey** 'gros, épais et aplati'

mandé: soninké **tefeto** 'être large, épais'

'frapper'

songhay: **kar** 'frapper, battre (D&Ch **kárú** id.)

mandé: soninké **katu** 'frapper, battre'

'saluer'

songhay: **fo** 'saluer' (D&Ch **fò** id.)

mandé: bambara **fò** 'saluer'

'singe'

songhay: **fono** 'singe' (D&Ch **fóonò** id.)

mandé: soninké **fune**, sembla **fɔ̄rɔ̄n** (pl. **fōnē**), don-samogho **fwȇ** (pl. **fȏne**) bobo **fona** 'singe'

'tourmenter'

songhay: **dor** 'faire souffrir, faire mal (physiquement ou moralement)'

mandé: mandinka **tóora** 'tourmenter', soninké **toore** 'souffrir'

'tresser'

songhay: **tur** 'tresser, coiffer' (D&Ch **túrú** id.)

mandé: bambara **tùru** 'crête, tresses', soninké **tulu** 'tresser'

etc. etc.

Inversement, les rapprochements intéressant seulement le songhay et les langues Niger-Congo non mandé semblent peu nombreux. Citons néanmoins les suivants:

'brûler, griller'

songhay: **ton** (Z. **tōn**) 'brûler, faire une brûlure, se brûler, faire cuire à feu nu' (D&Ch **tón** 'brûler, cuire sous la cendre')

Niger-Congo non mandé: cf. la reconstruction de Westermann (WSS) ***tùà**, ***tɔ̀** 'rösten', basée sur des attestations en ouest-atlantique et en kwa, auxquelles j'ajouterai baoulé **tɔ̃** 'faire chauffer'

'cultiver´

songhay: **far** 'cultiver, faire un champ avec l'iler'

gur: kurumfe **fɛr**, nuna, pana **vara**, isala **parɛ**,cala **fare**, tyembara (sénoufo) **fála** 'cultiver'

'manger'

songhay: **ṅã** (Z. **ṅwã**) 'manger' (D&Ch **ŋà** id.)

Niger-Congo non mandé: cf. la reconstruction de Westermann (WSS) ***nwa** 'beissen, essen', basée sur des attestations en kwa, gur et ouest-atlantique

'soleil'

songhay: **weyna** 'soleil' (D&Ch **wéynòw** id.)

gur: mooré **wẽnde**, dagara **mwina**, **wen**, bassari **wi:n**, etc. 'soleil'

'tuer'

songhay: **wi** 'tuer, faire mourir' (D&Ch **wí** id.)

Niger-Congo non mandé: des formes telles que **kpi**, **kpu**, **kwi**, **wu** sont largement attestées dans ces langues pour 'tuer' ou 'mourir' (cf. les séries comparatives de Westermann (WSS et de Greenberg (LOA)

Pour en finir avec les rapprochements lexicaux entre songhay et Niger-Congo, je voudrais souligner qu'y figure une proportion non négligeable de lexèmes songhay pour lesquels Greenberg de son côté propose un rapprochement avec le nilo-saharien. Certains sont d'ailleurs apparus dans les exemples ci-dessus. Voici la liste complète des 18 termes songhay qui apparaissent aussi bien dans être préférable'; Nicolaï reconstruit *baga compte tenue de formes baga ou baɣa attestées dans plusieurs dialectes)

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songhay: (D&Ch) tóŋgó 'carquois'

mandé: bambara tṍ, soninké tugura 'carquois'

'détester, haïr'

songhay: konna 'haïr (D&Ch kónnó 'haïr, détester')

mandé: mandinka kóŋ 'détester', kónna-ntee 'personne qui éprouve de la haine'

'épais'

songhay: tefey 'gros, épais et aplati'

mandé: soninké tefeto 'être large, épais'

'frapper'

songhay: kar 'frapper, battre (D&Ch kárú id.)

mandé: soninké katu 'frapper, battre'

'saluer'

songhay: fo 'saluer' (D&Ch fò id.)

mandé: bambara fò 'saluer'

'singe'

songhay: fono 'singe' (D&Ch fóonò id.)

mandé: soninké fune, sembla fɔ̄rɔ̄n (pl. fōnē), don-samogho fwê (pl. fône) bobo fona 'singe'

'tourmenter'

songhay: dor 'faire souffrir, faire mal (physiquement ou moralement)'

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mandé: mandinka tóora 'tourmenter', soninké toore 'souffrir'

'tresser'

songhay: tur 'tresser, coiffer' (D&Ch túrú id.)

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'cultiver'

songhay: far 'cultiver, faire un champ avec l'iler'

gur: kurumfe fɛr, nuna, pana vara, isala parɛ,cala fare, tyembara (sénoufo) fála 'cultiver'

'manger'

songhay: ṅã (Z. ṅwã) 'manger' (D&Ch ŋà id.)

Niger-Congo non mandé: cf. la reconstruction de Westermann (WSS) *nwa 'beissen, essen', basée sur des attestations en kwa, gur et ouest-atlantique

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songhay: weyna 'soleil' (D&Ch wéynòw id.)

gur: mooré wẽnde, dagara mwina, wen, bassari wi:n, etc. 'soleil'

'tuer'

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3. CONCLUSION

J'ai déjà dit ci-dessus que je m'interdisais ici de tirer une conclusion (qui, vue l'état actuel de la question, ne pourrait de toute façon pas être argumentée de façon valable), et que je me proposais simplement de montrer que le problème d'un rapport génétique entre mandé et songhay est un problème *réel*, qui repose sur un nombre relativement important de rapprochements possibles; mais c'est aussi un problème *ouvert*: les études comparatives en vue d'une reconstruction commençant à peine de se développer, tant du côté songhay (où ce type d'études vient d'être inauguré par l'importante thèse de Nicolaī) que du côté mandé, il convient d'être très prudent dans les interprétations et de se garder de l'enthousiasme excessif d'un Mukarovsky qui, sitôt constatée la possibilité de rapprochements entre ces deux groupes de langues, en conclut à l'existence d'une famille "ouest-sahelienne" regroupant songhay et mandé et disjointe des autres familles de langues négro-africaines - sans parler même du fait que, dans sa hâte à "prouver" l'existence de cette famille, Mukarovsky énumère, à côté de rapprochements tout à fait raisonnables, un certain nombre de rapprochements plus que hasardeux - pour ne pas dire franchement fantaisistes. Ceci dit, le fait que la thèse d'une parenté particulièrement étroite entre songhay et mandé ait trouvé un avocat aussi suspect que Mukarovsky n'est pas une raison pour l'écarter a priori.

Tout ce que l'on peut dire pour l'instant, c'est qu'aucune des solutions envisagées jusqu'ici ne semble avoir des chances sérieuses d'être en définitive retenue:

- rattacher purement et simplement le songhay à la famille mandé (comme le faisant Delafosse) se heurte au fait évident que, si les ressemblances de vocabulaire entre songhay et mandé sont importantes, par contre la plupart des radicaux qui paraissent à première vue les plus "typiquement mandé" semblent absents du songhay; ce point sera de toute façon à reprendre lorsque l'étude comparative des langues mandé aura progressé, mais il est peu probable qu'il y ait à revenir sur ce point;
- réunir comme Mukarovsky songhay et mandé en une famille "ouest-sahélienne" laissant à part, d'un côté le reste du Niger-Congo, de l'autre le reste du nilo-sahelien, se heurte à des rapprochements assez peu discutables entre les langues mandé et les autres langues Niger-Congo (une partie de ces rapprochements s'étendant d'ailleurs au songhay); là encore, la question de la place exacte du mandé par rapport au reste du Niger-Congo n'est pas définitivement réglée, il est toutefois peu probable que l'existence même d'un lien soit à remettre en question;
- inversement, toute solution qui (comme la classification de Greenberg) ne prévoie pas d'une manière ou d'une autre un lien entre songhay et mandé a de fortes chances de s'avérer pour le moins insuffisante.

Un point assez troublant est que le degré d'affinité entre le songhay et les langues mandé semble variable d'une langue mandé à l'autre. Il serait stupide de vouloir actuellement quantifier ceci, étant donné la disparité considérable de la documentation disponible sur les différentes langues, toutefois il est clair que le soninké revient particulièrement souvent dans les rapprochements. Ceci est d'autant plus remarquable que (à la différence du manding, lui aussi bien représenté dans les rapprochements) je ne disposais sur le soninké que d'une documentation très succinte sur le plan lexical. Il est probable que des données lexicales plus complètes sur cette langue permettraient de découvrir de nouveaux rapprochements. Etant donné la situation géographique actuelle et ce que l'on sait de l'histoire des locuteurs du soninké et du songhay, on ne peut s'empêcher d'évoquer les implications historiques de ce problème linguistique. Y aurait-il par exemple, parmi les rapprochements actuellement observables entre songhay et mandé, une partie imputable à une parenté très ancienne et une autre imputable à des contacts intensifs à date plus récente?

On entrevoit là des pistes de recherche qui dans l'immédiat risqueraient fort de ne déboucher sur rien, mais qui pourront s'avérer fructueuses lorsque l'étude tant descriptive que comparative des langues mandé et des différents dialectes songhay aura progressé. D'un autre côté, il resterait à voir du côté nilo-saharien dans quelle mesure il serait possible de confirmer, par des données plus fournies et plus convaincantes que celles avancées par Greenberg lui-même, l'existence d'une parenté ancienne entre le songhay et les autres groupes de langues rangés par Greenberg dans la famille nilo-saharienne. Je n'ai quant à moi absolument pas cherché dans cette direction, et c'est d'ailleurs là une raison majeure pour s'abstenir de proposer ici une solution à la classification du songhay. J'ai simplement voulu montrer que la recherche d'une telle solution ne doit pas négliger les possibilités de rapprochement entre songhay et mandé. S'il devait se confirmer que le songhay présente des affinités révélatrices d'un lien génétique tant du côté nilo-saharien que du côté Niger-Congo, s'il devait se confirmer aussi que le songhay présente un rapport beaucoup plus étroit avec le mandé qu'avec les autres branches du Niger-Congo, alors, c'est toute la classification génétique des langues africaines à son niveau le plus global qui serait à reprendre. Et il n'est pas du tout impossible qu'un modèle génétique plus raffiné que le classique arbre généalogique s'avère alors nécessaire pour une systématisation adéquate de ces rapprochements que pour l'instant nous nous bournons à constater.

NOTE

* Sauf indication contraire, les formes songhay sont citées d'après Prost, dont l'ouvrage constitue encore la référence la plus complète sur cette langue. Pour apprécier à leur juste valeur les divergences entre formes données par les differents auteurs cités, il faut tenir compte du fait que Ducroz et Charles ont travaillé sur le songhay-kaado, Tersis a travaillé sur le zarma, tandis que Prost, tout en donnant les indications sur les autres dialectes, a basé son travail sur le parler de Gao (songhay oriental).

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A. Wedderburn

Towards Idiomatic Reconstruction in the Nilo-Saharan Complex

1. INTRODUCTION

Metropolitanisation and Islamicisation have obscured many of the traditions of Kanuri-speaking society. Much information that still exists can only be collected in a piecemeal fashion. To find connecting links I have often had to travel far back over time and across space. Behind every oral tradition, eventually, lurks a fishing/hunting tradition or, because they were essential to the pursuit of these occupations, a miners' tradition. Behind these again lie the trails of animals on the move. For the nomad fisher/hunter/miner there were no boundaries except natural ones, or the immediate ones of kinship or hostility; gourd floats, ambach logs or rafts, reed bundle boats, sledges, provided transport across short or shallow water or along the fringes of an ice-cap; even the high forest was penetrable along paths blazed by elephant or along waterways: high mountain, extensive ocean or ice, waterless desert remained the most formidable barriers.

2. CLIMATIC FACTOR

Over time changing climate has been one of the most important factors modifying human activity and distribution. In a letter to Pankhurst at the Conference on Ethiopian Origins in 1977, Fleming, of the Institute of Oceanographic Studies, observed that the melting of the Scandinavian and Canadian ice-sheets led to a gradual rise in sea levels which reached a point of stability about 5,000 years ago, that is about 3,000 B.C. In the Red Sea the narrowest point shifted southwards from about 11,000 B.C. to 7,000 B.C.: "it was 11 miles north of the Bab-Al-Mandab, with a width increasing from 4 to 14 miles as the sea rose; and from 7,000 B.C. onwards the narrowest point was at Bab-Al-Mandab itself with a width of about 11 miles."

Predynastic Egyptian pots and paintings show oared as well as prowed boats on the Nile, an oared boat modelled in silver was found in the deepest levels in Sumeria and the Gebr el Arak knife handle from Egypt depicts high prowed Sumerian boats on the handle. One of the earliest seals from the Mediterranean, the Tiryns seal illustrated by Hutchinson (1962), shows a high prowed, oared bundle boat well capable of navigating the Red Sea. It is probable, in fact, that development of seafaring craft throughout this area was the direct result of a need to maintain communication as the water rose.

Equally catastrophic was the dessication of the desert. McBurney (1960:71) discussed the evidence for an extensive inland sea in the el Juf Depression fed by a river running north which was subsequently captured in the lacustrine region of Timbuctu to form the Upper Niger, and by rivers running south from the Atlas. This sea is thought to have dried up around 4,000 B.C., slightly prior to the period of the First Dynasty in Egypt. The salt flats south of the Tunisian Atlas and west of Tripoli, which in much more ancient times had formed an arm of the sea, also formed, until 4,000 B.C., an important inland lake still known in Greek classical tradition as Lake Triton. McBurney does not think that the eastern desert had been considerably more humid until this time but it is well known that in the marginal areas around Lake Chad where the lake bed is extremely shallow even a slight increase or decrease in rainfall and humidity will extend or diminish the lake surface over large areas. Almost certainly the Bodele Depression and the Bahr el Ghazal which links it to Lake Chad were much more fertile and better provided with surface water, much more water will have lain around the Komadugu Yobe and water courses, now subterranean, probably flowed at surface level. Areas further east will also have been affected. McBurney himself dates the drying-up of the surface springs in the Kharga oases from about 4,000 B.C. Archaeological evidence discussed by Emery (1965:137) shows that pasturage for cattle was available in Nubia up into the first millennium B.C. in areas which today would not tolerate it. The dessication of the Nile valley either from natural causes or from over-grazing must have led to a southward movement of cattle people into the Upper Nile regions where, according to Greek sources, the "cranes made continual war upon the pygmies". McBurney has pointed out that unlike the desert west of the Nile, the land to the east remained a much more fertile corridor stretching into central Africa.

With desertification the water-courses of the western desert became rivers of sand and, until contact was reopened by the setting up of Islamic states in North Africa ca. 700 A.D. and the regular north/south use of the camel, most communication across Africa will have been east-west or west-east, not directly but via routes which linked Somalia and the headwaters of the Nile to Lake Chad through Darfur or through Uganda and the Chari river system. Both Darfur and the areas between the Nile, Congo, Chari and Benue must therefore be looked on as important both as refuge areas and as dispersal points. To the west the Chad area was linked by the waterways of the Komadugu Yobe and the Niger to the Senegal. These are all factors which have to be taken into account when we are considering cultural evidence which must date back to pre-desertification as well as evidence dating from the later periods.

3. PRE-HISTORIC CULTURES

Following McBurney (1960), Oakley (1964) and Cole (1964) it is possible to reconstruct a generalised picture of the Nilo-Sahara along the following lines:

I. A Harpoon carving culture is manifested to have existed in the lake areas of central Africa 15,000 years ago, contemporaneously with the bone and deer antler carving cultures in Europe, known as Magdalenian, which also produced harpoons. Harpoons are connected with the mesolithic cultures on the Nile and a predynastic Egyptian wallpainting shows dark-skinned harpoon throwers in the Nile. Harpoon-throwing remained an important ritual of kingship throughout ancient Egyptian times; on Lake Chad the harpoon, **habia**, is thrown by the Buduma in sharp distinction from the Kanuri-speaking **dəgə**, the Duguti of Ibn Fartu, who use nets. There is no indication as to its antiquity or as to whether harpoons were used on the now extinct waters of the western Sahara. Barbed fish spears are used further west by fishermen in areas once under Habe influence, so a possibility exists that it was the Habe who were responsible for introducing barbed harpoons into the western Sahel. In the Nile valley, however, the earliest levels of settlement yet explored have shown sophisticated combs and tools carved from ivory as well as copper tools. Throughout ancient Egyptian times organised expeditions were made into the Upper Nile regions in search of ivory and it is not unreasonable to suppose that the tradition of ivory and harpoon-carving lay with ancestors of those people in Niger-Congo who still produce some of the most sophisticated carving in the world.

II. Evidence of a culture which has been widely named Aterian has been found in caves along the north coast of Africa. It is thought the localised form, known as Oranian, was a variant of a culture found in different parts of the Sahara which may have had characteristics in common with a culture in western Spain as well, perhaps, as with the east African culture known as Stillbay. I would connect this culture primarily with the hunting of mountain sheep and goat, that is Barbary sheep and Nubian ibex in Africa, a hunt for related species pursued over an area which stretched to the hills east of the Tigris.

Archaeological evidence shows the Oranian culture spread along the north coast of Africa between 10,000 and 6,000 B.C. to reach the Kharga oases and the

Nile valley, but the more widespread extension of the Aterian as a whole has not been dated. The people involved with this culture seem to have been powerfully built, true sons of Atlas.

III. Isolated within the Oranian as it spread westwards and later picked up and carried with it was *a small culture which has become known as Capsian* which had emerged gradually since paleolithic times in the Awras or Aures hills, the southern face of the Tunesian Atlas overlooking the Chott el Melhrir and the Chott el Djerid, the salt flats which are vestigial remains of the "Lake Triton" I have already referred to. It spread towards the Gulf of Sirte where an exceptionally dry zone prevented it from being carried along the coast. It was, however, caught up by the Oranian and carried from there south-west to the Kharga oases and thence northwards into the Levant.

There has been some discussion as to whether this could have had any possible connection with the contemporaneous microlithic culture in Kenya which has been called Kenya Capsian. In North Africa shell mounds mark the early stages of the culture, later developments show the use of ostrich egg-shell for beads, ochre, and the production of artefacts including stone drills by what were, for that period, highly developed lithic techniques. Amongst the assemblage were decorations of ostrich egg-shell probably derived from basket-work, and a considerable number of prophylactic pendants and phallic objects. The workmanship on some of these suggests the influence of harpoon-carvers and it is tempting to see this as evidence of harpoon-carvers in the west Sahara but the contact could have been made in the area of Khartoum.

For reasons which I shall indicate later it is possible to see this north African Capsian as a local variant of a Bushman-type culture which had as its focal point Somalia, with a possible extension along the Oman coast. I shall suggest that one of its features was hunting gazelle (Kanuri ngəri) with nets as well as the deer with branched horns which became a cult in Luristan, next to the Zagros mountains, and which, although it does not exist in Africa is called ngarajan or barajan in Kanuri.

Derivatives

Khartoum and Shaheinab: The earliest evidence for a fired-pot-making industry associated with fishing has been found at Khartoum dating from about 8,000 B.C. possibly preceded by a long period of sun-dried clay industry in the drier zones. Later variants found at Shaheinab show definite association with a hunting culture which Arkell thinks spread out from Tibesti. It is represented by the use of green amazone stone and, apparently, by the herding of a small breed of goat. There is the possibility that this area of the Nile valley may have been a meeting-place for all three of the cultures which I have described above. The large size of the skeleton associated with the Khartoum pots could have derived from a mixing between Aterian and harpoon-carving types (the latter have not yet been identified). Cole (1964:157) records it as the earliest example of a negro type in Africa but I have yet to be convinced that this has any specific meaning.

Badarian: From the fishing settlements of Khartoum the technique of firing pots seems to have been carried up the Nile to the earliest settlements which are named Badarian. Emery (1965), writing of the A Group of Nubian peoples who appear to have been the same as the predynastic Egyptians, mentions "alabaster grinding stones, palettes of alabaster and sandstone, wooden boomerangs, copper borers" as well as "shell bracelets and beads of carnelian, blue glazed steatite and shell". These are all important when we are considering Capsian stone-mining and stone carving techniques reaching the Nile settlements from the region of the Awras mountains and the Chott el Djerid. He also suggests that the increase in the population responsible for this culture was due to increased pressure on the Lower Nile areas by newcomers in the fourth millennium, that is at the period when the dessication of the desert might have been expected to cause land competition in the Nile valley. One of the factors aggravating this land competition would have been the migration into Africa of cattle herders from the Levant.

Natufian: In the Jordan valley in the Levant evidence has been studied of a culture of mixed origin which was probably influenced by all three groups I have mentioned. The evidence of skulls found in the lowest levels of Gerzeh and Megiddo shows mixed physical types to have been present, similar to types inhabiting Africa (de Vaux 1970:533). Definite cultural resemblances have been suggested to features of the Mugem hunting group in Portugal and to the North African Capsian (McBurney 1960:227).

From about 8,000 B.C. onwards, although pottery had not yet been introduced, dry stone-walling was used to surround a large settlement at Jericho of round huts and a spring to which ritual visits were made. Again in the pre-pottery phase skulls were plastered and preserved. The cult of the head after death is referred to in the Egyptian Book of the Dead, it is a feature of many old traditions in the Cameroons and in areas south of Borno as well as formerly amongst Yoruba, Idoma and Ijo. 'A replacement of round huts by rectangular huts with plasterd walls and floors, still in the pre-pottery phase, may be evidence of a southward movement of cattle-owning people from Asia Minor. While there is not room here to discuss the inferences which might be drawn from such observations one should perhaps point out that, although walled towns appear to be a feature of sheep and donkey-herding cultures rather than of cattle-herding, the first stone walls around Jericho seem there to have preceded the domesticisation of sheep; the same may well have been true of the Nile valley towns where the earliest evidence remains lost in mud. The evidence of early Egyptian pictograms is that walled towns there also preceded the arrival of the First Dynasty cattle-owners.

Other features of the Natufian culture are the use of stone sickles, perhaps modelled after jaw bones, suggesting the development of grain production and harvesting, and the use of querns and pit storage in ways very similar to their use today in Borno.

Asia Minor: James Mellaart, in the sixties at Catal Huyuk in the central Anatolian plateau, revealed a series of settlements the lowest of which was older than Jericho. Wall paintings at the third level depicted hunters, clad in red, bringing in a prize animal which has been described as a bull but which appears to me to be a sow with curved horns. Just such a sow has been described by Graves (1955) as a cult animal in very ancient eastern Mediterranean rites. Above this the Catal Huyuk evidence is concerned with insect colonisation and above this again, dated at about 6,500 B.C. plaster models on the walls of a cult chamber show a mother figure giving birth to three bulls modelled over actual bulls' horns. There are also ceramic figures depicting a mother, a mother with a daughter springing from her side, and a priestess or goddess figure with a spotted cloak and a spotted beast, presumably a leopard. Bone remains reveal that at this level sheep were also kept. Textile, the oldest yet found, clings to a piece of thigh bone. The building itself is not that of a walled town but of an inward-looking complex with various cult and storage rooms. Access seems to have been through the roof as with small rectangular houses in the area of Bobo Diolasso south of the western Sahara.

Gurney (1952:213) pointed out that until the second millennium B.C. the population of Asia Minor was predominantly dolichocephalic. Here, as at Jarmo and Luristan east of the Tigris, I think it is possible to think in terms of extension of the hunting cultures I have already described.

Jarmo: The earliest domesticisation of sheep seems to have been in the Zagros hills to the east of the Tigris where, around 9,000 B.C. yearlings were kept in captivity. By 7,000 B.C. a town had begun to be established at Jarmo composed of rectangular houses built of mud pisé, sometimes with stone foundations and with ovens and basins baked into the floors. Pottery arrived considerably later. In neighbouring Luristan, as I have mentioned, deer with branched horns were to become a cult symbol. Peoples on the east side of the Tigris included the Elamites and the Gutii; it may be coincidence that in the ancient Hurrian language (I am indebted to Professor C.T. Hodge through Dr. J.P. Hutchison for this information) **lam** meant 'last' or 'end', and it may also be pure coincidence that certain designs on Elamite pottery are common throughout the Sudan. Sheep-herders appear in the Mediterranean with the Erechthids at Athens. One of the oldest ports on the Red Sea, as I shall mention again, was Quseir and the transport of sheep from the Bab-al-Mandab by boat would have been a simple and feasible operation and would explain their presence in the Middle Nile valley in the fourth millennium B.C. Quseir stood opposite the Kharga oases. The transport of cattle would have been more difficult and less likely.

Backwash (cattle-herders and sheep-herders): Archaeological evidence therefore suggests that the entry of the Natufian culture into North Africa was, at least to some degree, a return of elements which had earlier moved out of Africa and developed locally in the Levant. The same could well have been true of elements re-entering via the Bab-el-Mandab. In the Fayum, connected at that time to the Nile by the Wadi Hawwara, the coming of cattle people in the fifth millennium is marked by the deposit of cattle bones. It has been disputed whether these were of domestic cattle but, until very recently (Wedderburn 1979a) the Kanuri-speaking pastoralists known collectively as Koyam continued to herd a breed of highly disease-resistant dwarf cattle known as **wadara** 'dwarf', almost certainly the same word as **muturu** used for a small breed in the Congo. Cole (1965) gives an exactly similar description of a small breed introduced into Britain in neolithic times. Relevantly, **madara** is the name used for 'grazing slopes' in Crete (Hutchinson 1962) and the same word is used for 'milk' in Hausa. The grazing lands east of the Nile as far south as Punt were known throughout Egyptian history as the abode of Hathor or Kathur, worshipped as a cow goddess with a disc between her horns, her sacred tree was the sycamore; but the Eritrean and Somali coasts were probably always important also for sheep and the cataracts and the Middle Nile became essentially the realm of the ram god. Tubiana (1964) records an oral tradition which shows the Gude as sheep-herders who had taken over settlements in the Bahr el Howar, between Darfur and the Kharga oases, before the advent of the cattle pastoralists, and Graves (1955) records a tradition collected by Diodorus Siculus of a great migration of sheep-herders to the area of Lake Triton which afterwards bent back across North Africa and entered the Levant, leaving untouched in the region of Lake Triton the holy city Mene where the Ethiopian fish-eaters mined every kind of precious stone. It is possible that such a migration eastwards across North Africa could have resulted from the dessication of the western desert. It is important to distinguish between traditions concerning early cattle pastoralists and those concerning early sheep-herders.

4. IDIOMATIC RECONSTRUCTION

Bearing in mind the great linguistic divisions into which contemporary African languages have been classified it is tempting to see them as deriving from the situation which I have just described and to see them as reflecting differences which have existed almost *ab origine* in African society.

In fact the truth is probably far more complex. It seems highly likely that the concepts of "tribalism" and "ethnicity" so determinedly imported into African studies during the nineteenth and twentieth centuries are very largely misleading. It is my experience that in almost any area where one probes beneath the surface one meets a heterogeneous situation. Even at micro-level clans or descent groups of different origin operate a political system which balances and caters for their different interests. I do not want to idealise this, these situations are frequently accompanied by clashes, conflicts and coups d'état, but even these are often allowed for. It then becomes a matter for historical/sociological investigation to define what determines the predominant language in any one area at any one time, political and economic factors might be as important here as mere numeracity. Another factor which has to be taken into account is the extraordinary facility with which people at a pre-literate level appear to acquire new languages and to transfer from one language to another, even from one language family to another.

In analyses of such situations the time element becomes extremely important and the matter becomes as interesting to historians as to linguists when one asks whether there is any evidence to show how long a particular group or group of people has been speaking/absorbing/being absorbed by a particular language. A linguist may go to an historian to explain this but, equally, an historian might want to know whether the cultural evidence was in the form of vestigial traces suggesting a long submerged sub-culture or whether it was structured enough to suggest very recent and incomplete assimilation. At this point, therefore, it becomes imperative for the student of idiomatic language to have made his reconstruction against which he can match his data.

In the formulation of his reconstruction there is an important difference in methodology from that of the pure linguist who abstracts his data and strives to simulate clinical-type conditions in order to achieve his results. The student of idiomatic language does, and must, continually relate his data to the context which infuses it in order to understand it. An idiom, whether it occurs verbally or in ritual or in act or in behaviour is a charged form - for this reason I use the term *ideoform* to mean any such charged symbol - and its meaning lies outside its immediate appearance in its position within what Levi-Strauss called the "bundle of relations" of which it is part. Nevertheless, some abstraction is necessary for ideoforms can be borrowed just as words can be borrowed, and frequently are. As they are assimilated into the structure of a contra-culture they take on a contrary meaning. It therefore becomes important once one has identified a symbol to be able to examine and compare its role in different societies to determine whether it is performing the same function in each case or a contra-function as this will be an indicator either of cultural relationship or of the degree of assimilation or acculturation which has taken place. This cannot be done unless some kind of abstract hypothesis has been constructed against which the data can be matched.

In an attempt to build such an hypothesis one would not obviously, attempt a reconstruction on the basis of a few minimal forms in one society alone. It is difficult in the first place to know whether a minimal form is an original form or a vestigial remain; and on such limited data the exercise would be tantamount to an Intelligence from outer space trying to reconstruct man on the basis of a single broken torso, finding first the nipple, next the *os coccis* and so on. One would also have to remember that a form borrowed into a contra-culture and assimilated can become very productive so that one might have to go very far back to find evidence of any such borrowing.

With these reservations in mind one might still find the Nilo-Sahara a rich field for exploration. Under the modernising pressure of Islamicisation and rapid metropolitanisation much of the evidence which could lead us back over thousands of years is daily being lost but this is part of the historical process itself; one which I would define as the divorce of a growing metropolis from its hinterland. It was as true of the metropoles of the Nile valley, Sumeria, the Semitic civilisations and Hellenic Greece as it is today that though they might trade artefacts to their hinterland and set up political authority over it they could do little to influence the roots. One is therefore far more likely, in the remoter areas of the Nilo-Sahara, to find surviving traditions of features that went into the early formation of those civilisations than features deriving from their later day evolution. This is because the kind of cultural idiom which finally survives springs from the inarticulated base or is assimilated into the structure built on that base.

Graves (1955) gives various instances of traditions collected by Hellenic scholars referring to Libyan origins, these seem to be borne out by some of the traditions of ritual and customs collected by Tubiana (1964); similar revealing comparisons can I think be made in other directions in the Levant and the Middle East.

Fortunately for those interested in tracing idiom back through time, cultural features, including vocabulary, associated with traditional occupation have tended to be preserved relatively longer in the face of change and to have been modified more slowly than more general common-place idiom. Significant among these is magic-making. The role of magic in the power game should not be forgotten. The possession, as people think, of powerful magic has always given the possessor an importance which does not necessarily correspond with his expected economic or political status. Because of this in a heterogeneous society where one section is politically and economically dominant a small group of different origin might still remain extremely influential and a good deal of its traditional paraphernalia (including vocabulary) might be retained longer than would normally be the case. In the structure of a heterogeneous polity, moreover, different forms of magic (magico-religious) power might have to be accommodated. Here would be an opportunity to study surviving forms; it would also again necessitate the reconstruction of some kind of hypotheses in order to aid the recognition both of similarities and of differences.

5. PROTO-CULTURAL HYPOTHESES

I append here some proto-cultural hypotheses on which I have been working; they are tentative and subject to constant revision as data accumulates. The research is on-going. I have also extrapolated a certain amount of data on "bundles of relations" in Nilo-Sahara; for those who have followed my argument the fact that I cross established contemporary language frontiers will not come as a surprise. I find it necessary also to say here that I am not talking about universals, which is a fascinating but completely different topic. While accepting the likelihood of basic universals I do not easily accept the argument that a universal could be simultaneously articulated in an identical form by totally unconnected people; the road to such articulation is so long and the factors tending towards diversification would be so many that a true coincidence of this kind would be almost an impossibility. I would argue that either the identification is superficial or faulty or that there is a hidden connecting link.

I hope I have made it clear that if there is a connecting link it would have to be reflected in the total cultural paraphernalia, ritual, art, behaviour, folklore and language. For this reason when I have tried to follow up links suggested by a recurrence of ideoform in one or other of these media I have always looked for supporting evidence in other media. There is not room here to present all the supporting evidence; I have tried, therefore, to signify those lines along which I consider there is sufficient indication that it would be rewarding to search.

I would stress that there is some urgency in convincing those who are studying traditional rudimentary crafts and occupations as well as rituals and behaviour to publish the vocabulary that accompanies them before it is lost. In some cases it may already be too late.

Hypothesis I

This is connected with the harpoon-carving people whom I see as ancestral to the ivory and wood carvers of the forest regions. Possibly, originally, these were a very small-statured people. "Dwarf" artisans are common in ancient Egyptian pictograms, they appear as fan-holders also and as musicians in Hittite rock engravings. Very similar dwarfs are represented in early Benin bronze and in seventeenth century sketches of Benin.

At the base of their culture lay, I would suggest, belief in physical transmigration of souls, it was therefore highly animistic and dominated by a belief in reincarnation which required ritual sacrifice for renewal. Behind a vividly explicit articulation of beliefs through stylised natural images lay a belief in a paternal spirit expressed perhaps in a tonal sound **u** or **ou** approaching the Yoruba **o** meaning 'thou', and a maternal spirit connected with water and expressed as **mmw** or **mm**.

Hypothesis II

This might be derived from the Aterian-type cave dwellers, hunters of mountain sheep and goat. It was probably featured by the veneration of elemental forces of nature, particularly wind. Among many Chadic-speaking peoples this cult of the wind survives in the veneration of dust devils. This was probably the origin also of the pre-Dorian legend that the wind-goddess coupled with the serpent which she kept in her aegis. The red-fringed aegis would have been in imitation of the apron which hangs in front of the Barbary sheep. Fringed basket-work bags are among Musgu women's treasured possessions in the Cameroons and in the northern Cameroons too a fringed bronze aegis decorated with concentric circles which could well have been associated with the serpent wind forms a part of the traditional wedding regalia. The Mbasa word for 'strong wind' is **thlira** which is very close to the Greek wind goddess **hera** as well as to the Kanuri word for 'strong wind' **karwa**.

According to certain Greek traditions the winds would have been kept in a cave. The priestess sat at the mouth beating her drum and interpreting oracles. In a region of earthquakes and volcanic activity this is not a surprising concept. According to other traditions, as in Yoruba south of the Sahara, a priest would have been kept in the cave, possibly her consort. This seems to have gone together with the matriarchal type organisation, daughters will have competed for office, hence the legend of the quarrel in Libya between Athene and Pallas, though Pallas suggests the Kanuri **fal** 'one'.

Other Greek traditions of pre-Dorian mythology refer to the keeping of the winds in a bag, possibly derived from hunters' leather bags or from the placenta, **uwa** in Hausa. The custom of beating the wind-maker could have derived from after-birth customs; in Hausa there is also **buhu** 'sack' (perhaps containing **fu** which occurs frequently in words concerning 'wind' or 'dust') originally perhaps a 'wind-bag'.

The elemental forces required propitiation and blood sacrifice and were frequently represented in contest with each other or with man.

Hypothesis III

The third hypothesis concerns savannah-hunters-of-gazelle-with-nets and fishermen-with-nets who I have suggested spread across the African sahel and Middle Eastern sahel and beyond at the same time as the Aterian-type mountain sheep and goat hunters. I see them as apexing in Africa in Somalia with an extension south of the forest and another north-westwards through Tibesti. Before 4,000 B.C. the Chott Djerid south of the Awras hills, whose names recall the Yeri Arwasan of nomad Koyam traditions, the Chott Melhrir and the el Juf of the western Sahara could have been meeting-places for all three of the culture types I have hypothesised and mixed micro-polities might well have been existing in the Lake Triton area before being carried to the Nile and from there to the Levant on the one hand or via the Red Sea to Oman on the other. With dessication of the desert the savannah hunters will have dispersed outwards or sought refuge in the more watered areas.

I see the gazelle hunters as ancestral to the Ngere and Dan of the Cavally River, the Guro of the Ivory Coast whose newly circumcised Froger depicted in the seventeenth century wearing gazelle masks, to the **ngəri ngərima** 'gazelle masters' of Borno who claim to be Tubo and call themselves Azze, identical with the Azza artisan hunters of Niger and Chad associated with the Dan. I think one can follow, through ancient traditions and sculpture, these gazelle masters into the Levant and Asia Minor where south of the Black Sea they were known in Hittite scripts as Azzi-Hayasa, probably in origin the same as the more westerly Ahhiyawa. Ngere around the Black Sea may have become Neuri mentioned as late as the fifth century B.C. by Herodotus whose traditions associate them with having been driven by "serpents". The "serpents" suggest the "serpent people", the Denira of Darfur, the Dinka of the Upper Nile always close to the Nuer. Dinka are known to Nuer as **jaang** or 'daughter people'; the Kanuri word **jang** 'branch' has the same implication and is probably the origin of the name Dan in Niger and Chad. The dnnym of Hittite traditions were probably the first colonisers of the silver mines of Cilicia; Dan of Hebrew traditions were famous as silver-smiths and associated with the horned viper; Danaids, associated with silver, were the legendary first colonisers of Argos coming via Crete then associated with fishermen with nets, Dictys, whose name is very similar to the Kanuri **dəgə** used both for the net and the fisherman. The Danaids carried leaking jars as do the Saharan women who render salt from soil deposits and sugar from doum palm nuts, as well perhaps as collecting alluvial metal ore.

The evidence of tradition from the Cavally River suggest that there was a graded organisation of society reflected in the wearing of masks. Apart from the different hunter masks, gazelle, hyena and others such as are depicted on old Saharan rock drawings there were leader masks such as appear in the early pantheons of Egyptian gods. Different sections of society or clan leaders may have been represented by such masks amongst them the miners, **karibi kusa** in Kanuri which refers to the skin apron, whose ancestral figure was Kusa thought to reside in an *acacia albida*. Traditions suggest that they were once associated with the Kousr hills of the northern Dra, the final **r** would be a Kanuri-type 'place' and we have already seen that the holy city Mene in the Lake Triton area was legendarily associated with mining. Diodorus Siculus specifically mentions sard which is a form of agate and agate was always greatly prized northwards in Sardinia and Etruria and is still prized among the Kanuri who name it **age**. If, as tradition suggests, early colonisation of Argos was by miners the name Acrisius borne by the "father" of the Danaids suggests **azzi-ri** 'the place of Azzi' and Aggri beads would be mined stone from such a place. Similar colonisation by miners from Kousr could have been responsible for the name of one of the oldest towns in Anatolia, Kussara, probably sited near later Kayseri or Caesarea; for the name Quseir, the port at the Red Sea end of the mining road from Coptos to the Red Sea, a road which itself was under the guardianship of the god Min, perhaps more correctly Muñmi, a cult perhaps carried there from the Capsian area of Mene on Lake Triton. Perhaps too the name was carried to the Hasaramaweth (Hadramawt) by the first copper miners who colonised Uman. Copper awls were a feature of the A Group inhabitants of the Nile valley. Such mining colonisers must also have been responsible for the diffusion of the mask, kosr or guysr or kisra which probably was responsible for the French word "guiser" 'to disguise' and was eventually carried north to Scandinavia by Norsemen from the Mediterranean, while in Borno it survives in the descent group name **ngazər** associated with the spotted hyena.

Probably in this society of masked rituals **ngəri** originally signified not a lineage group but, as amongst the Ivory Coast Guro and as in the idiomatic language of the Ngame of Chad, the young circumcised hunters, peculiar to all sections of this society would have been, however, a totem extension which included all spotted animals and things, apparently supreme amongst them, the leopard. Since the hunting leopard knocks down young gazelle by their legs to bring them home for its young these hunters with nets and throwing sticks may well have been the first, in emulation, to bring home live quarry and so begin the process of domesticisation. Such a suggestion is supported by the ritual importance given to the net at Lagash in Sumeria in the third millennium B.C., by the description of the Marduk's use of the net in his battle against Tiamit in the Mesopotamian *enuma elish* where the other gods praise the cunningness of its make, by the association of the net with the smith god Hephaestus in the oldest pre-Dorian legends, by the netting of the bulls depicted on the famous Vapheio cup around 1500 B.C., and by the use of the net in Roman circuses. If the Azzi or Aggi were amongst the earliest of pastoralists, groups of them may well have been among the first cattle nomads to return to Africa, following waterways into the Sahara; known as Agar/Hagar/Hawar/Sawa/Saba they may have given their name to the waterways along which they travelled, the Wadi Saoura which before 4,000 B.C. flowed south from the Atlas well into the Sahara west of the Hagar/Hoggar mountains; the Wadi Hawwara between the Fayum and Egypt; the Bahr el Sau or Howar between north-east Darfur and the Kharga; the Howara in southern Borno and so on. In their travels they must have met and mixed with people who shared a

remote common origin as well as with those who did not; it is possible too that they brought with them the ethnic strains and traditions acquired during their sojourn outside Africa. Similar bands will have moved south through Arabia and southeast into India. One feature which ceramic finds at Catal Huyuk suggest was developed there was the cult of the leopard-skin priest and the dispersal of this cult seems to mark their progress to Harappa, to Egypt and the Upper Nile and further west in the Sudan. The frieze from Hagia Triada (Crete) in the fourteenth century B.C. showing a sacrifice of spotted things reminds us that in origin it was part of the wider totem extension which included spotted hyena, spotted python, blotched monitor lizards and spotted birds. It is, however, the inclusion in this totem at Udo, where kingship is associated with a founder Chima coming from Benin and where the king of the Edo-Bini is referred to both as "leopard" and as "ant-hill" because, like the king, the ant-hill has innumerable eyes, which gives us the real clue to this totem extension. The Udo ant-hill reminds us of the hundred-eyed Argus which, according to Greek traditions, guarded the spotted Viper Woman of the Armenian cattle pastoralists. On reconsideration the totem extension of spotted things is seen to derive from a magic potency associated with the circle and above all with the eye, which is a circle within a circle within a circle; in pools of water; stars; foot-prints (especially rounded hoof marks); spotted animals; cucumbers. The circle is also revered in the generation cycle; the empathetic bond between hunter and hunted; the cycle of seasons as marked by the passage of constellations; the dance; the sacrificial fire. Breaking of the cycle requires an act of atonement and the sacred nature of the cycle of life is potently expressed in the concept of divine kingship which requires that the king must not die but be buried alive, or that the act should be simulated.

6. CONCLUSION

In conclusion I can, as I have said, do little more than summarise some of the indications which point to directions in which I am finding it valuable to carry out more detailed research.

Marshall (1969) in her discussion of the Dance Fire of the !Kung Bushmen refers to the prevalence of the circle in Bushman thought and belief and there are various other striking features of !Kung Bushman idiom which suggest some kind of common source with Saharan Kanuri, amongst them the generation namesake relationship !gu!na - !guma (Marshall 1957, 1960, 1962) perhaps originally denoting a relationship between grand-parent and grand-child which corresponds to and Aggri beads would be mined stone from such a place. Similar colonisation by miners from Kousr could have been responsible for the name of one of the oldest towns in Anatolia, Kussara, probably sited near later Kayseri or Caesarea; for the name Quseir, the port at the Red Sea end of the mining road from Coptos to the Red Sea, a road which itself was under the guardianship of the god Min, perhaps more correctly Muhmi, a cult perhaps carried there from the Capsian area of Mene on Lake Triton. Perhaps too the name was carried to the Hasaramaweth (Hadramawt) by the first copper miners who colonised Uman. Copper awls were a feature of the A Group inhabitants of the Nile valley. Such mining colonisers must also have been responsible for the diffusion of the mask, kosr or guysr or kisra which probably was responsible for the French word "guiser" 'to disguise' and was eventually carried north to Scandinavia by Norsemen from the Mediterranean, while in Borno it survives in the descent group name ngazər associated with the spotted hyena.

Probably in this society of masked rituals ngəri originally signified not a lineage group but, as amongst the Ivory Coast Guro and as in the idiomatic language of the Ngame of Chad, the young circumcised hunters, peculiar to all sections of this society would have been, however, a totem extension which included all spotted animals and things, apparently supreme amongst them, the leopard. Since the hunting leopard knocks down young gazelle by their legs to bring them home for its young these hunters with nets and throwing sticks may well have been the first, in emulation, to bring home live quarry and so begin the process of domesticisation. Such a suggestion is supported by the ritual importance given to the net at Lagash in Sumeria in the third millennium B.C., by the description of the Marduk's use of the net in his battle against Tiamit in the Mesopotamian *enuma elish* where the other gods praise the cunningness of its make, by the association of the net with the smith god Hephaestus in the oldest pre-Dorian legends, by the netting of the bulls depicted on the famous Vapheio cup around 1500 B.C., and by the use of the net in Roman circuses. If the Azzi or Aggi were amongst the earliest of pastoralists, groups of them may well have been among the first cattle nomads to return to Africa, following waterways into the Sahara; known as Agar/Hagar/Hawar/Sawa/Saba they may have given their name to the waterways along which they travelled, the Wadi Saoura which before 4,000 B.C. flowed south from the Atlas well into the Sahara west of the Hagar/Hoggar mountains; the Wadi Hawwara between the Fayum and Egypt; the Bahr el Sau or Howar between north-east Darfur and the Kharga; the Howara in southern Borno and so on. In their travels they must have met and mixed with people who shared a remote common origin as well as with those who did not; it is possible too that they brought with them the ethnic strains and traditions acquired during their sojourn outside Africa. Similar bands will have moved south through Arabia and southeast into India. One feature which ceramic finds at Catal Huyuk suggest was developed there was the cult of the leopard-skin priest and the dispersal of this cult seems to mark their progress to Harappa, to Egypt and the Upper Nile and further west in the Sudan. The frieze from Hagia Triada (Crete) in the fourteenth century B.C. showing a sacrifice of spotted things reminds us that in origin it was part of the wider totem extension which included spotted hyena, spotted python, blotched monitor lizards and spotted birds. It is, however, the inclusion in this totem at Udo, where kingship is associated with a founder Chima coming from Benin and where the king of the Edo-Bini is referred to both as "leopard" and as "ant-hill" because, like the king, the ant-hill has innumerable eyes, which gives us the real clue to this totem extension. The Udo ant-hill reminds us of the hundred-eyed Argus which, according to Greek traditions, guarded the spotted Viper Woman of the Armenian cattle pastoralists. On reconsideration the totem extension of spotted things is seen to derive from a magic potency associated with the circle and above all with the eye, which is a circle within a circle within a circle; in pools of water; stars; foot-prints (especially rounded hoof marks); spotted animals; cucumbers. The circle is also revered in the generation cycle; the empathetic bond between hunter and hunted; the cycle of seasons as marked by the passage of constellations; the dance; the sacrificial fire. Breaking of the cycle requires an act of atonement and the sacred nature of the cycle of life is potently expressed in the concept of divine kingship which requires that the king must not die but be buried alive, or that the act should be simulated.

6. CONCLUSION

In conclusion I can, as I have said, do little more than summarise some of the indications which point to directions in which I am finding it valuable to carry out more detailed research.

Marshall (1969) in her discussion of the Dance Fire of the !Kung Bushmen refers to the prevalence of the circle in Bushman thought and belief and there are various other striking features of !Kung Bushman idiom which suggest some kind of common source with Saharan Kanuri, amongst them the generation namesake relationship !gu!na – !guma (Marshall 1957, 1960, 1962) perhaps originally denoting a relationship between grand-parent and grand-child which corresponds to the Kanuri **c(h)una** relationship; **su** is Kanuri for 'name' (cf. **suna** in neighbouring Chadic Hausa). The !Kung say that the great god !Gao gave his name to the first man; another form of !Gao, //Gauab, used by the eastern !Kung suggests the very early Egyptian earth god Geb/Keb/Seb. !Gao is said originally (Marshall 1962:240) to have emerged from the ground "pushing the earth up with his head". The idea recalls many totem and ritual practices across the Nilo-Sahara concerned with ants and ant-hills or ants' nests. In the Higi blacksmithing clan (included today in Chadic) a blacksmith tells me that the king of the harvest ants bears the same title as the chief of the blacksmiths. The idea of the emergent god is vividly expressed in old Akkadian seals interpreted as showing the sun-god Shamash rising from his sacred mountain but, if one looks closely, the sun-god is an insect with antennae and the concept is probably derived from an older possibly Sumerian source; the "mountain" is more credibly an ant-hill of the Nkpu type in the Udo tradition. In the seals the descent of the earth-god into the mound coincides with the arrival of the water-god under the sign of the serpent, so fitting the widely recognised cycle of constellations, the descent of the constellation known to us as Orion at the end of the dry season when the Water Serpent is reaching the zenith. In the Sumerian pantheon the original creator water-god was Enki. Again there is a great deal of similarity between Bushman ideas of magic potency **n/um**, or **!gi** or **//ke:n** (discussed by Marshall 1969:352; Lewis-Williams and Biesele 1978:121; Barnard 1979:68, 75) and the role of the Sumerian procreator Enki as well as in the idiomatic use in Kanuri of the prefixes **nəm** and **kən** and the ideas of magic potency associatied with different pools of water ('water' in Kanuri is **nji/nki**, in Tubo **yi**). Pools are connected with headmanship rights among the Bushmen (Marshall 1960) and with occupancy rights among the Koyam nomads. The concept of the termite heap venerated by the Edo-Bini at Udo seems to belong to an idiomatic bundle of relations which includes Udo an island off the coast of Punt said by the ancient Greeks to have been inhabited by the python king, the **guti** mound at Kusseri where kingship rites are also associated with ants and monitor lizards and pythons, the **kudi** mound on which the Tomagra kings were installed, the mound on the Susa stone in Sumeria connected with the Gutii whose god Zu has been mistakenly called a "bird god"; he had six legs and an insect's tail; **zuzu** in Kanuri is 'flying ant'. There are also the insect cults in the lower levels of Catal Huyuk in Anatolia and the word **pankus** used for the 'community'.

At Kusseri Lebeuf (1969) who has described local idiom in detail defines various aspects of the **guti**, as the phallus of an outspread giant, its interior the womb, ngoum, its seed (ə)nkuna which bears a striking resemblance to the **khufu-khnum-anp(u)** concepts of the Nile valley. The aspect of the outspread giant relates to the whole problem of the transfiguration of the ant-divinity into a giant divinity Sisyphus/Teshub/Tob/Tchom/Gom/Tsafon/Sob/Sopdu/Sof/Sef known in the Semitic world as the smith god Hadad.

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